HOME COMPUTING WEEKLY
AN ARGUS SPECIALIST PUBLICATION
July 9-15 1985 No. 120 30p

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HCW FIRST

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Acorn's future in the balance

Acorn has been hit by a new financial crisis resulting in the suspension of company shares from trading on the Stock Exchange.

The maker of the BBC micro is now involved in discussions with its major shareholder Olivetti to determine if the Italian electronics giant will rescue Acorn a second time.

Just four months ago, Olivetti bailed out Acorn with £10.4m in return for 49.3% of the shares.

As HCW went to press, Acorn observers were divided on whether Olivetti will inject the £10m that is rumoured to be necessary to keep Acorn afloat. It is believed that Acorn owe its suppliers over £8m.

An official statement from Acorn's merchant bankers, Close Brothers, said, "As has been widely reported in the Press, the market for home and small personal computers has become more difficult and a further very substantial decline has occurred in the sales from the levels generally predicted earlier this year. This has led to a significant deterioration in the financial position of Acorn since the time of the rights issue."

Creditors were invited to a meeting, added the statement, to discuss "new proposals relating to the future financing of the Group."

Acorn and its financial advisers declined to comment on the present situation until discussions with creditors and Olivetti have reached an outcome.

The latest financial upheavals at Acorn are creating a state of uncertainty among its dealers. "I wish they would make a decision one way or another," said Mr Mughal, managing director of AKHTER.

"We are told one thing and then another and at the moment we are left hanging in mid-air."

Mr Mughal was optimistic that Acorn would survive. "We are selling 1000 BBCs a month and about 250 BBC B+s and that's double the quantity compared with six months ago. I have no doubt that Acorn will come through even if it is as a smaller concern."

According to one dealer the cause of Acorn's problems may not be solely due to falling sales. "The trouble with Acorn is that the people making the decisions don't understand the market and the people advising them have no experience of business."

In an attempt to raise cash, Acorn is believed to be on the verge of selling off its subsidiary Acornsoft. British Telecom is reported to have already held discussions with Acorn to negotiate a possible takeover bid for Acornsoft.

● As revealed in last week's HCW, Acorn has already announced a price cut in the BBC B+ in an effort to boost sales.

Acorn's chairman – Alex Reid

Little Acorn – mighty oak?

More Spectrum machine code p.26
Expand your BBC printer ROMs reviewed p.34
Musical HCW
Music and the Micro p.30...
...Make music on your C64 keyboard p.31...
...Catch musical mice on your Amstrad p.28

Spectrum + OCP

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"SNOOKER – VIDEO POOL (OCP) is a recent addition, and is probably the best of the lot" . . . CRASH May 1985

"CASINO ROYAL is a very pleasing version . . . well worth considering" . . . CRASH May 1985

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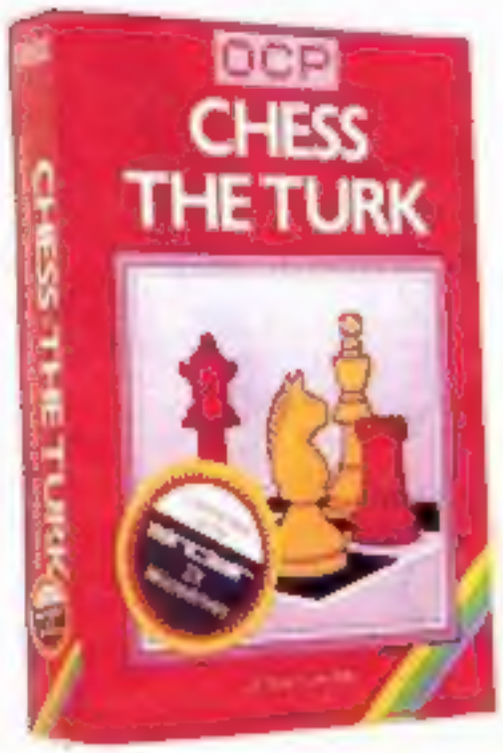

Another classic winner from OCP is CHESS — THE TURK which is very popular, and deservedly so, since it was launched. Probably the best chess game for the Spectrum around. Outstanding features include: Blitz chess, Demo mode, Replay, Edit/set-up, List moves to screen and printer, line print the board, save moves and board, load moves and board. There are six levels of play and all the normal chess moves are made with ease. If you can't beat 'em — join 'em in other words you can use the HELP key! A bargain at £5.95

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HOME COMPUTING WEEKLY

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Soapbox

The Soapbox published in HCW 117 hit the nail on the head.

The use of home computers as serious purchases has been under developed if not abused. Home computers as teaching aids is an area that has been sadly neglected to date.

Pre-recorded educational software certainly has its role, but this passive form of teaching is not enough. Surely it is within the realms of possibility, especially with cable television around the corner, that local TV stations could transmit educational programmes requiring a more active and immediate response be it from within the home or from schools and colleges.

Children are naturals with computers and educationalists should take advantage of this. It is better to look at a TV monitor and have some control over its format than to look at a blackboard from the back of the classroom.

Thomas Layton, Salford

If you wish to get on the Soapbox send us a letter and we will do our best to print your views. We even send a prize to all those whose letters are printed.

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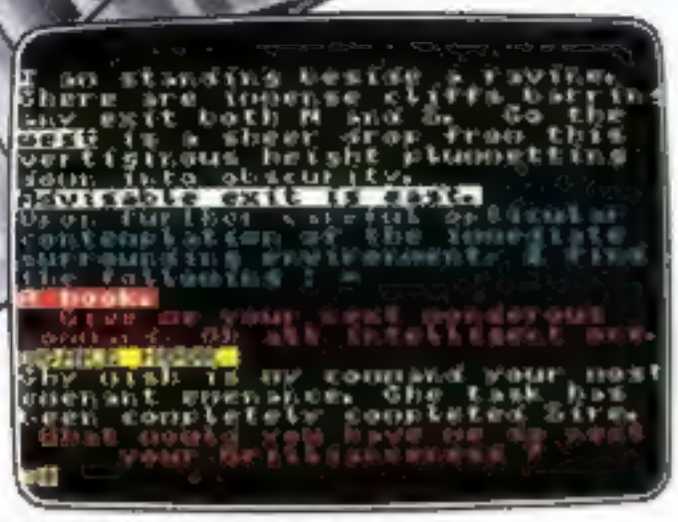
BASIC LIVING

Jim Barker/Jon Wedge

SILVER RANGE... Seeing



THE HELM Adventure
An amusing, stylish text adventure

HELICHOPPER Arcade
Fast and smooth multi-screen action

MR FREEZE Arcade/Strategy
Six compartments, each tougher to de-ice

CHICKIN CHASE Arcade
Ruling the roost can be a hard life

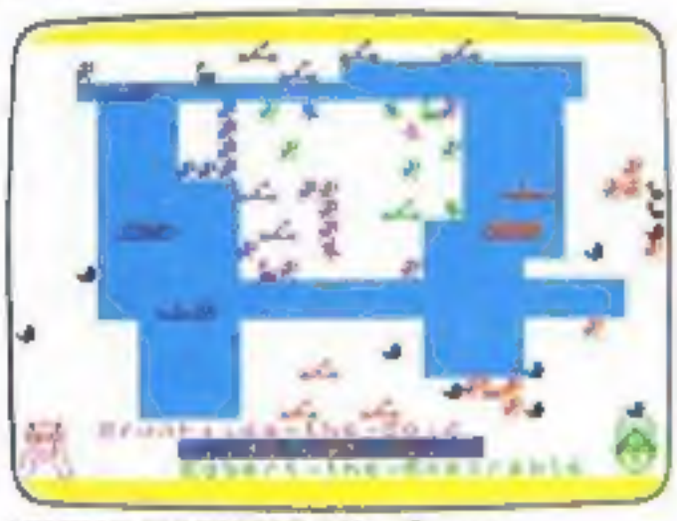
EXODUS Arcade
Strange creatures emerging from the pits

DUCK! Arcade
Comedy and music in this novel duck shoot

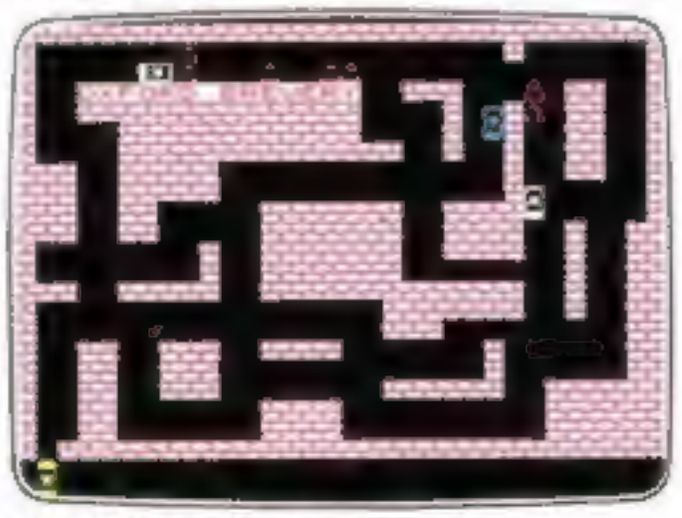
ESTRA Arcade
Recover the sacred statue of Estra the Snake God

MICROCOSM Arcade
Addictive and challenging multi-level arcade action

SUBSUNK Adventure with Graphics
Trapped on the sea bed in a scuppered submarine



VIKING RAIDERS War Game
A test of strategy against the computer or friends



RUN BABY RUN Arcade
Multi-car cop chase and shoot-out

ZULU Arcade
100 golden masks hidden in a magic maze

DON'T PANIC Arcade/Strategy
Amusing and challenging, a game with a difference

DON'T BUY THIS! Compilation
Five of the worst games you have ever seen

THE HACKER Arcade/Strategy
Terminal to modem, telephone network to mainframe

Firebird and the Firebird logo are trademarks of British Telecommunications plc.

is believing £2.50 each.

FAHRENHEIT 3000 Arcade/Strategy
Sixty four screens to meltdown

GOGO THE GHOST Arcade/Adventure
150 different haunted castle chambers

CIRCUS CIRCUS Arcade
Twenty circus rings to escape

HEADACHE Arcade
Nervous Ned's quest to serve the Brain

BIRD STRIKE Arcade
Wing the planes and shoot the pigeons

THE WILD BUNCH Strategy/Adventure
Accused of murder, hunt the real killer

MICKEY THE BRICKY Arcade
Four screens packed with fun

BOOTY Arcade/Adventure
Twenty holds full of pirate loot

SHORT'S FUSE Arcade/Strategy
Sam Short secret agent versus Boris and his bombs

FIREBIRD SILVER CATALOGUE

AMSTRAD CPC 464
026 **MR. FREEZE**
029 **THE WILD BUNCH**
042 **SHORT'S FUSE**
044 **SUBSUNK**

BBC MODEL B
003 **BIRD STRIKE**
005 **DUCK!**
022 **ESTRA**
023 **THE HACKER**
025 **MR. FREEZE**
039 **MICROCOSM**

ELECTRON
027 **BIRD STRIKE**
030 **THE HACKER**

COMMODORE 64
015 **MR. FREEZE**
017 **BOOTY**
018 **EXODUS**
019 **HEADACHE**
020 **ZULU**
024 **GOGO**
028 **ESTRA**
032 **SUBSUNK**
034 **THE HELM**
038 **CHICKIN CHASE**
041 **CIRCUS CIRCUS**

VIC 20 (UNEXPANDED)
002 **MICKEY THE BRICKY**

SPECTRUM 16K/48K
006 **RUN BABY RUN**
035 **DON'T PANIC**

SPECTRUM 48K
008 **VIKING RAIDERS**
012 **THE WILD BUNCH**
014 **MR. FREEZE**
016 **BOOTY**
031 **SUBSUNK**
033 **THE HELM**
036 **SHORT'S FUSE**
037 **HELICHOPPER**
040 **DON'T BUY THIS!**
043 **FAHRENHEIT 3000**

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NEWS

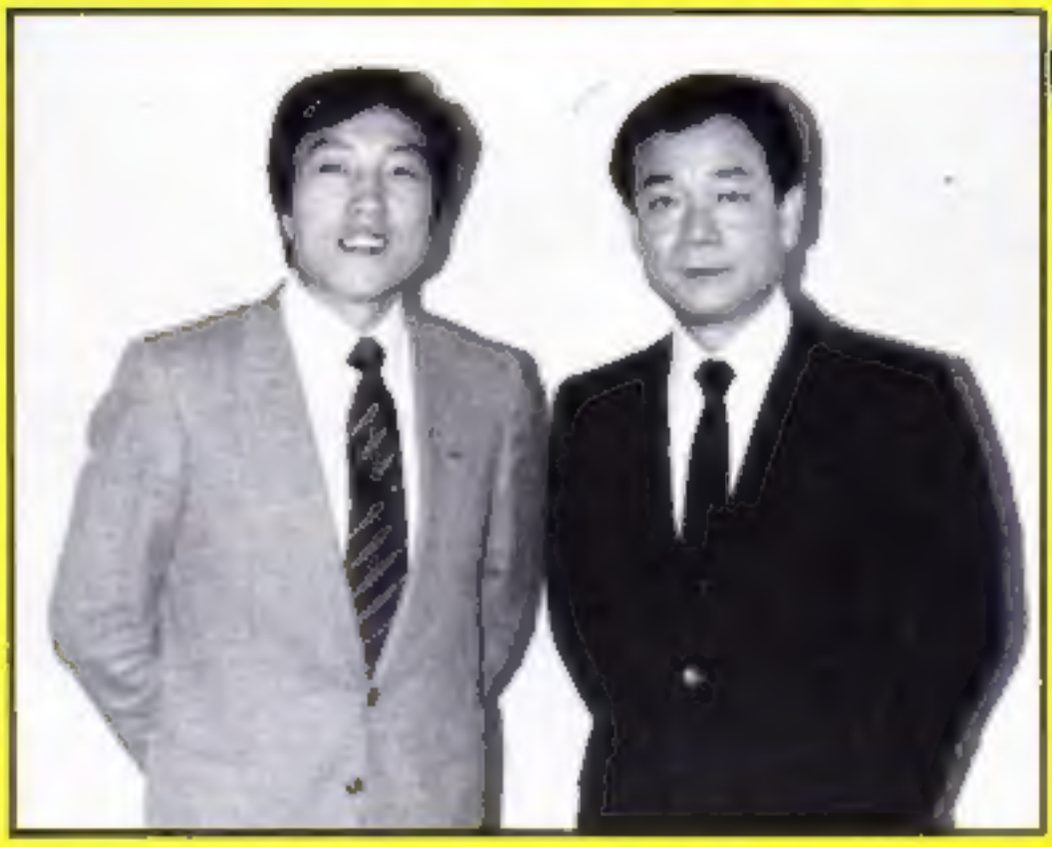
One year old

Konami, a software company primarily known for its MSX titles and arcade machines, has just celebrated its first year of trading in the UK.

The company is now committed to supporting the MSX range of computers. The software operation of the company commenced in November 1984 although Komani is still probably best known for arcade games like Scramble.

A major agreement has recently been concluded between Konami and Ocean to produce a number of titles under the Imagine label for the Spectrum, Commodore, Amstrad and BBC computers.

Konami, Television House, 269 Field End Rd, Eastcote, Middx HA4 9LS



Konami's bosses celebrate their first birthday

Power cleaner

Like many other users Tony Firshman has been plagued by interference from dirty power supplies.

His solution to this annoying problem is a neat adaptor complete with all the necessary components. The inclusion of a filter, inductive element and suppressor proves a successful remedy and this useful computer cleaner is now on the market.

It is available through Tony Firshman Services and costs £14.00.

Tony Firshman Services, 43 Rhyl St, London NW5 5HB

Button up

Avid arcade fans will know about the torture that joysticks undergo when you are playing the new sports games. They tend to fall apart and end up in that vast joystick graveyard in the sky.

Help is at hand. Konami, the inventors of a number of arcade hits, have just converted their Hyper Shot for the C64. This unit is a joystick port add-on that comprises just two buttons. One is used for the running action and one for jumping.

Originally developed for use with Hyper Sports, recently released by Imagine, the unit should work with other games too. It costs £9.95 but is only available direct from Konami.

Konami, Television Hse, 269 Field End Rd, Eastcote, Middx HA4 9LS

Wot — no fish!

Video and Chips — HTV's children's programme on the wonders of the microchip — will be back on your screens from August 14th.

Mick Brown returns as presenter with his new star-reporters, Sonya Saul and Gary Simmons. Mike Sharp is the resident boffin and general know-all. The seven-week series will cover such subjects as car design, tracking Halley's Comet, computer art and a special link-up with the French science magazine programme called, naturellment, "Pic et Poke".

Although it covers all aspects of hi-tech, the emphasis remains firmly on fun with weekly competitions and do-it-yourself items.

HTV, TV Centre, Bath Rd, Brislington, Bristol

Clean it up.

N E W S

Lightning fast

Lightning has announced details of a new Deluxe Joystick that can strike twice in the same place by incorporating twin firing buttons.

The new joystick includes many features only found previously on more expensive units and has been developed to improve on Lightning's previous joystick, the JY 102 bearing in mind the suggestions of users.

The stick includes an additional automatic firing button and an extra long cord with a standard 'D' connector. To aid one-handed operation the model is mounted on rubber suction cups. It is compatible with Amstrad, Atari, Commodore, MSX and Sinclair systems. It costs £9.95.

Lightning's Home Computer director, Loretta Cohen, said, "We are delighted with the sales of our original joystick, which passed the 15,000 mark, and we are looking to this new model to emulate its predecessors perform."

Lightning, 841 Harrow Rd, Harlesden, London NW10 5NH

Switch on

Micro Dealer UK has just announced that they have added the Datel Electronics Switchable Joystick Interface to their catalogue.

The interface is compatible with any 9-pin joystick adaptor such as Quickshot and Sureshot. It is able to work with any Sinclair, Kempston or Cursor-Controlled Design found within all programs written for the Sinclair Spectrum or Spectrum-plus.

It is available immediately and retails at £12.99.

Micro Dealer (UK) Ltd, 29 Burrowfield, Welwyn Garden City, Herts AL7 4SS

Amstrad communications

Amstrad users will soon be able to interface with the real world using the new products from Skywave Software.

The Multi-Port is claimed to make "all other interfaces for the Amstrad obsolete". It boasts a full RS232 serial port with a software controlled baud rate and the correct voltage supply using a switched mode unit. There is a 24 bit parallel port which is physically compatible with the BBC's user port. The board can accommodate two sideways ROM's with the Multi-Com ROM being fitted as standard.

Added to all this the unit is stackable, so that disc drive interfaces, or even another multi-port can be attached. There are no compatibility problems between the port and the disc or tape systems.

The Multi-Com ROM is a communications package that can be used to access most of the major databases and information systems. It supports Telecom Gold, Prestel, and Bulletin Boards and allows you to use a wide range of modems currently available.

In order to present the Teletext standard on the Amstrad the display is given four colours on the 40 column screen. This is not the full Teletext range but gives a good approximation, it is claimed. Pages can be printed, stored and transmitted by the software and there is even the chance to try telesoftware by means of an experimental format.

As part of the development of this hardware and software package, Skywave will soon be launching SKYTEL, a new multi-port bulletin board. The system will be on-line soon when the special phone number will be announced. Users of Multi port will have special status on the system due to an ID built into the software.

The unit will cost £99.95 and although not available yet the company are very interested in hearing from Amstrad users thinking of upgrading their machine.

Skywave Software, 73 Curzon Rd, Boscombe, Bournemouth BH1 4PW

Black box for Oric

Cumana are now producing a stylish disc drive for the Oric Atmos microcomputer.

This three-inch interface has an internal power supply unit and is supplied with an Oric compatible operating system disc and all interconnecting cables.

Elegantly designed in black, the system can support up to four disc drives in Double Density Mode whether they are 40 or 80 track drives, single or double sided.

The unit contains an on-board expansion port enabling the user to connect other peripherals and is operational simply by plugging into the back of the Oric Atmos.

Cumana Ltd, Pines Trading Estate, Broad St, Guildford, Surrey GU3 3BH

Software link-up

Silversoft, an established software house, has just released details of an agreement made with another UK based software company, CLR.

This arrangement means that CLR will take a quantity of share equity and become more involved in the running of Silversoft, whilst Silversoft will benefit from the sales experience of CLR.

Andre Posumentov, M.D. at Silversoft, feels the union will be mutually beneficial "We have been very active developing business and educational software ...while CLR has remained in the forefront of the home computer market."

Clement Chambers MD of CLR is equally enthusiastic "This link-up will help ensure the continued growth of both companies."

Watch out

Seiko has come up with a useful little invention which will help you to carry plenty of important information around with you and summon it up at the touch of a button.

The Seiko UC-3000 is a wrist watch terminal which comes complete with a compact size QWERTY keyboard which allows you to input data using an electro-magnetic system which needs no wires for connection. To enter information into the wrist terminal you simply clip it to the keyboard and type in the information which you wish to store. The terminal has a four line display and has fully adjustable contrast so that it is easy to read.

Seiko's Steve Bradd said: "You don't need to know anything about computers to work the wrist diary. It stores various kinds of information such as time, alarm, schedule and memo data and at the push of a button you can choose which type of information will be displayed.

The Seiko UC-330 memo diary costs £99.95.

Hatton, Berkley Hse, Berkley Sq, London W1

A handy memory

Naughty naughty

Swearing by your home computer has taken on a new meaning since users of bulletin boards — the citizens band radio of microcomputing — discovered the system was ideal for exploring the ruder areas of the English language.

Deleting expletives has become a time consuming chore for users all over the country but now MicroLink, the new nationwide service for the micro market is evaluating a program that promises to clean up.

The Naughty Words Editor will identify offending obscenities before they cause faces to turn red.

Tim Clarkson, who is in charge of the project explained how the new verbal watchdog worked. "You initially create a text file or glossary of naughty words or phrases, so when these turn up in any message, the whole of the text is pulled out and put in an abeyance file. Later the messages are checked over by the operator to see whether it's safe for them to be released."

A teething problem with the Naughty Words editor is that it homes in on certain obscenities that turn up innocuously within words. Innocent words such as title can find themselves despatched to the abeyance file.

A partial answer to the problem is to create a text file of offending phrases rather than individual words but the ambiguities of the English language means that naughty words can creep into a text unnoticed.

Despite these initial difficulties, the company behind MicroLink — DataBase Publications — are confident that the Naughty Words Editor will be the answer to electronic graffiti.

War film

German television crews recently visited PSS. They were involved in filming a program based around the recent PSS release, Theatre Europe which has become quite a controversial title since its launch a few weeks ago.

PSS, 452 Stoney Stanton Rd, Coventry CV6 5DG

Theatre Europe on film

The modem manufacturer Miracle Technology has produced an advanced communications package for the BBC computer called Databeeb.

The ROM based intelligent firmware allows access to a variety of systems including Prestel, Micronet, bulletin-boards, telex and user-user communications.

Its most notable features are the Macro command file, a powerful carousel facility and telesoftware down-loading capabilities.

The price of £29.90 (inc. UK delivery) includes a user and function key guide.

Miracle Technology UK Ltd, St Peters St, Ipswich IP1 1XB

Software Update

Ariolasoft has been making a right song-and-dance about its latest release Skyfox. The game is a realistic combat simulation which has you flying your Skyfox fighter around taking on both planes and tanks.

The disc version will be available first, but Frank Brunger of Ariola suggests that the cassette version should be ready in August. The graphics are good and the movement from air to ground quite smooth. A number of flight and fight fans are likely to be enthralled.

Whilst we are on the subject of song we hear that the latest release from Anirog, Five-a-side Football, includes the singing of the crowd!

The game also features a two player option and true penalties. If you play dirty and keep fouling the opposition you are likely to find yourself in a punch up with the other players. That's taking realism a little too far. The game should be in the shops now and is for the C64.

The first release from Intrigue for the Amstrad should now be in the shops. Called the Tomb of Kuslak it is a graphic adventure program with read-outs of energy, defence and strength that are updated in real time. If you fancy going digging in lower Egypt the game will cost £7.50.

US Gold have just released photos of the Dambuster launch when a number of the original Dambuster crew had a chance to meet and talk over old times. They were happy to have a go at the game as you can see from the photo.

Dambusters meet C64

Title	Machine	Price	Publisher
Nick Faldo's Open	C64, Spec	£9.99	Mind Games
Combat Air Patrol	Dragon 32	£3.95	Vidipix
Jigsaw	Dragon 32	£3.95	Vidipix
Buck Rogers	Spectrum	£7.95	US Gold
Rocco (Rocky)	Spectrum	£7.95	Gremlin Grphs
Beatcha	Entrpse 64/128	£7.95	Enterprise
Jack's House of Cards	Entrpse 64/128	£7.95	Enterprise
The Rocky Horror Show	Amstrad	CRL	
Graham Gooch Test Crkt	C64	£9.95	Audiogenic
Monopoly	Spectrum	£9.95	Leisure Genius
Cluedo	Spectrum	£9.95	Leisure Genius
Hyper Sports	C64,Spec	£7.95(S) £8.75(C)	Imagine
Project X The Microman	Spect(C64,Am)	£2.99	Compass
Boulderdash	Amst(Aug30)	£9.95	Mirrorsoft
Hijack	Atari	£7.95	English
Metabolis	Spectrum	£6.75	Gremlin Grphs
Fantastic Voyage	Amstrad	£8.95	Amsoft
Super Pipeline	Amstrad	£8.95	Amsoft
Tomb of Kuslak	Amstrad	£7.50	Intrigue
Dynamite Dan	Spectrum	£6.95	Mirrorsoft
Amsprite	Amstrad	£14.95	Cable
Graphic Designer	Amstrad	£14.95	Cable
Boulderdash	MSX	£6.95	Orpheus
Exodus: Ultima II	C64	£19.95	All American Ad
Skyfox	C64 (disc)	£12.95	Ariolasoft
Chuckie Egg 2	C64,Amstrad	£7.90	A 'n' F
Toolbox 2	BBC, Electron	£9.95 book £10.95	BBC Soft

Climb that ladder!

McGraw-Hill, a software house specialising in educational programs, has just announced the launch of a Ladders to Learning series for the C64. Aimed at three to 13 year olds and covering all the 3 Rs, each module has been scripted by teachers and tested by parents and school children.

McGraw-Hill has recognised the potential of the computer as a powerful learning aid and the benefits that it can offer to both pre-school and junior children. The software, on cassette tape at £7.95 each, is designed to be both easy and fun to use whilst encouraging a desire to learn.

There are also plans to develop a range covering all major subjects to post 'O' level age.

McGraw-Hill, Shoppenhangers Rd, Maidenhead, Berks SL6 2QL

Super loader

Trigsoft, whose GT Loader is reviewed elsewhere in this issue, has contacted us with details of changes that it has made to the product.

The new version is 1.3 and there are a number of modifications that make the unit easier to use. The screen display is now on during use and the whole operation has been measured at 8% faster than the version 1.0 which we reviewed. It also claims that the loader is more reliable at reading the various discs and can give details of disc errors without using the Disc Operating System.

If you need more detailed information you are asked to contact Trigsoft at the address below.

Trigsoft, 161-163 Rutland St, Grimsby, Humberside

Clap hands

Dudley Langmead Enterprises has come up with a novel idea which should save hours of time-wasting and prevent the cat from receiving a kicking.

The Key Tracer is a micro-chip controlled device which looks suspiciously like a key-ring and responds (wait for it) to the owner clapping three times.

The Tracer then emits a high pitched beeping sound so the keys can be located before you call the emergency services — only to find the keys were in your back-pocket.

Prices at £6.95 it's available from July onwards.

Dudley Langmead Enterprises, 16 Bedford St, Hitchin, Herts

Take me to your keys

JOY OR TEARS

Both interfaces and the new Joycard are assessed in this week's reviews. There are products for all pockets in this batch of goodies

It's difficult, sometimes, to know what to say when you're faced with reviewing you 87th joystick interface. After all, they all do the same job and the cosmetic side is often just a matter of how much you're prepared to pay for a nicely designed case.

Still, after a bit of thought, and half a packet of chocolate digestives, it occurred to me that the three new interfaces I had to review covered the range from the basic, no frills number, to the more expensive end of the market with everything but the kitchen sink attached.

It's a pleasure to say, from the start, that all three are well designed and constructed, which is something that you can't say for some of the others around. They all fit the Speccy's peripheral port nice and snugly, and there's no "give", so you don't put any strain on the edge connector by handling them at all. They don't wobble, rattle, or have any wires showing, and are all robust enough enough to stand up to the wear and tear of hours of zapping.

Starting with the least expensive of the three, we come to the new Kempston Joystick Interface. This is a new version of what is now (more or less) the standard interface for the Spectrum, and is, therefore, compatible with the vast majority of Spectrum software. It has been redesigned to make it look more suitable for use with the Spectrum Plus, and simply offers a single joystick socket. The instructions are clear and concise, and include details of how to convert a couple of non-compatible Sinclair/Psion games, as well as a short program to test the interface from BASIC, both of which are good ideas, and it's nice to see that Kempston is thinking about these details. At £9.95, it's fairly basic but is at least as good as anything else in the under £10 range.

Next up, at £16.81, is the Stonechip Programmable Interface. Equipped with a small LED on/off indicator, and standing horizontally, so that it faces you when in use, this can be "programmed" for use with absolutely all Spectrum software. Obviously this is worthwhile, but this versatility requires a little effort from the user before it can be exploited.

To program the interface you first enter "programming" mode, using the switch on the front of the case. Then, one at a time press all the combinations of keyboard controls required for the game you want to play, and, as you do this, manipulate the joystick into the corresponding positions for controlling the game. If, for example, you wanted to program the interface for JSW, you would have to press each of the controls for left and right movement whilst simultaneously moving the joystick handle left and right. Then, if you wanted Willy to jump to the left or right, rather than just walking, you would again move the joystick left and right, but this time with the joystick's fire button pressed to add the jumping effect.

This did, at first, seem very fiddly and it took me ages to program the interface for Knightlore (which requires some quite complex manoeuvres), but after a while I got the hang of programming the joystick and can now get it ready to play just about anything in only a few moments.

Finally, weighing in at £18.75, is the Kempston Pro Joystick Interface. This one has got everything (in fact, it may even have too much, but I'll come to that later). Like its simpler little brother, this is a neat black unit that lies flat when inserted into the Spectrum port, with all the features on the case facing upwards. It has three joystick sockets, one of which is a combination of normal Kempston standard and cursor control compatible. The next two sockets are adapted to Sinclair's own Interface 2 standard and provide the possibility of two players having joysticks plugged in simultaneously.

Between them, these three sockets must surely provide compatibility with just about any piece of software on the market, but without any of the fiddly preparations required by a programmable interface — you just plug in and go. Again Kempston has provided clear instructions with the interface and even gone into the details of how the IN command is used to read the signals from the joystick

In addition to all this, the Pro also has a socket for ROM cartridges. Frankly though, I'm not sure why this feature was included, after all, ROM based software simply never caught on for the Spectrum (mainly due to cost), and it took me a whole day just to track down half a dozen pieces of software on ROM in order to test them on the interface. Of course, once I plugged the ROMs in, they all loaded instantly and worked perfectly, but since there is so little ROM software about — and what there is costs £15 per cartridge — I can't see that the inclusion of a ROM socket on an interface is really very useful, especially since it must add to the cost of the product.

If Kempston was to produce a version of the Pro with just the three sockets on their own, for about £15, then that would be unbeatable value. As it stands, it is good value for what it offers, but with the ROM socket it simply offers a feature that very few people will need.

Of course your choice will be dictated by the amount of money you've got spare, but whichever one you buy, I doubt if you'll be disappointed by any of them.

C.J.

Kempston Pro Joystick Interface

Price: £18.95

Kempston Joystick Interface

Price: £9.95

Manufacturer: Kempston Microelectronics

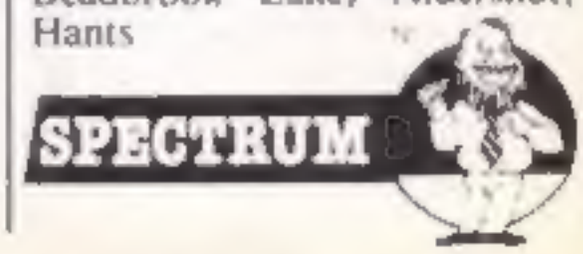
Address: Singer Way, Kempston, Bedford

Stonechip Programmable Interface

Price: £16.81

Manufacturer: Stonechip Electronics

Address: Brook Trading Est, Deadbrook Lane, Aldershot, Hants



Joy Card

The joystick has evolved quite rapidly over the last few years, changing from a crude twiddly little thing to the large, pistol-gripped, self-centering, micro-switched variety, which we see today. Despite these changes it still consists of a base and a handle, which often take up a great deal of desk space. The Joy Card from Hudson Soft is a radical departure from this standard format but it does seem to work.

The Joy Card is a 12 x 6 x 2.5 cm plastic rectangle on the surface of which are two fire-buttons and a 3cm wide octagonal plate. It can be connected to any micro which accepts the nine-way D-plug fitting, eg Amstrad, Commodore, Atari etc.

The size of the card encourages a relaxed style of play as the whole thing fits comfortably in the palm of your hand. The plate can be rocked in any of eight directions and will cause your character to move in that direction, assuming that the game allows diagonal movement. When playing space invader-type games which use only left, right, and fire, I found no problems and was soon knocking out quite respectable scores.

However when attempting to play games which also allowed vertical and diagonal movement, I found that the small size of the plate was a hindrance. Unless you consciously pressed at the left, or right-hand, edges of the plate, your little chap would jump up and down at the most inopportune moments.

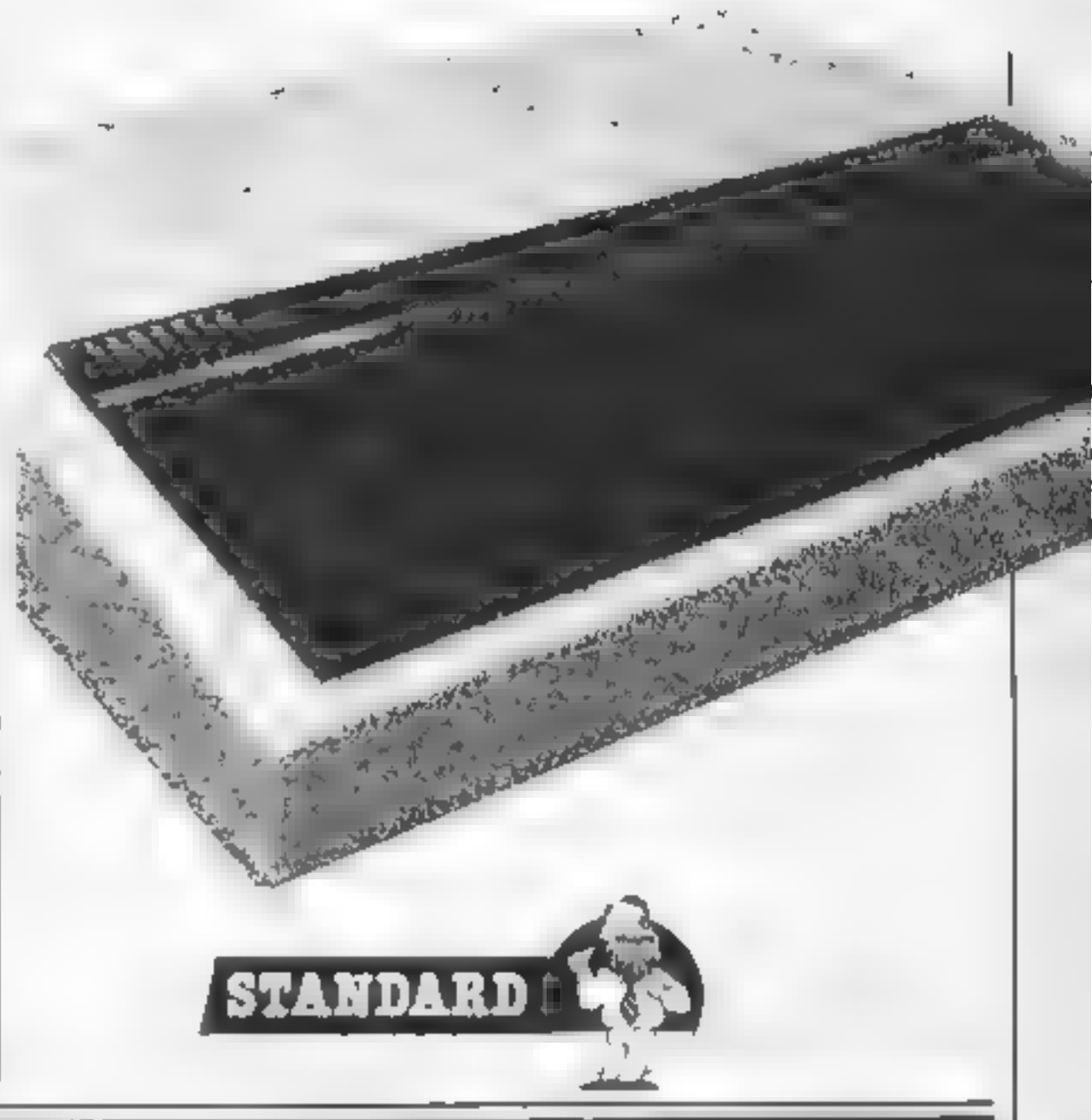
The Joy Card is a neat and tidy joystick substitute which with a little practice can hold its own with the real thing.

J.R.

Price: £8 95

Publisher: Hudson Soft

Address: 26 Wycombe Gdns, London NW11



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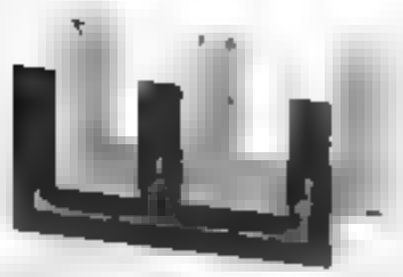


SKYFOX

Dynamite Dan

Skyfox

Skyfox represents yet another step forward in 3-D graphic motion and the quality has to be seen to be believed. Falling more into the arcade action field rather than flight simulation, you can concentrate more on eliminating the invaders than keeping Skyfox in the air.

The scene is set with your colony being invaded and you must wipe out the enemy force before they destroy your installations. The means to accomplish your mission is the hi-tech Skyfox war machine which is bristling with five heat-seeking missiles, five guided missiles and unlimited laser shots

The mission begins with a view of the main computer at home base. This utilises Commodore block graphics to indicate the various types of enemy craft and the colony's installations. Moving the cursor to one of these squares automatically locks the autopilot onto that square and greater detail can be revealed by selecting the zoom facility which gives a more detailed picture of what is happening in that particular area.

For example, if you want to know if an installation is under attack simply select the square, zoom in and you can see tanks, planes and mothercraft in the area. The installation will also be shown with a status readout which indicates the strength of its protective shield. Once this readout reaches zero the installation is destroyed.

After a quick check of the battlefield situation the mission can be started. The scene changes to a view through the planes cockpit with the expected array of indicators, the most important being fuel and shield levels. If either of these reach zero then you're a dead Fox.

As you launch from the tube and take flight the first thing that you notice is the superb scrolling graphics which scroll in all three dimensions at once. Usually the second thing that strikes you is a volley of shots from enemy tanks!

Skyfox is controlled by joystick and speed can be selected by pressing a number key or, for a quick getaway, the afterburners can be engaged which boosts the power to maximum for as long as the relevant key is pressed. I found the afterburners useful to get me out of trouble in aerial dogfights where a lack of care can place you at the centre of a ring of converging planes spitting fire and making your shield level drop like a stone (closely followed by your Skyfox).

Each battle zone is shown on your radar screen and, if you're lucky, as the game goes on you will find it more difficult to locate the enemy. This is where the base computer comes in again. As long as your base remains intact the computer can be used in flight by pressing a key. This allows you to lock the autopilot onto a chosen area. The alternative is to switch to autopilot which takes you to the nearest enemy forces, very useful in mopping-up operations.

Now for the bad news, the game is disc based because there are two basic battlegrounds, one above and one below the clouds. To allow efficient memory-use there is a cloud base stretching from 1,000-10,000 feet, which means your view from the cockpit turns white as the disc loads the new scene

With five skill levels to choose from and 15 battle scenarios, the game should hold the interest for a very long time and the graphics will make you want to dash out and buy a disc drive just to run this game.

E.D.

Price: £12.95

Publisher: Anolasoft

Address: Asphalte Hse, Palace St, London SW1.

C64

Dynamite Dan

Despite having an extremely naff title Dynamite Dan is one of the most enjoyable platform games that I've played in some time.

It's not at all original. The plot requires you to guide Dan around the castle of Dr. Blitzen, searching for sticks of dynamite needed to blow open a safe containing some stolen plans.

But what makes this game stand out from so many other JSW clones is the sheer business of the games. All the screens are incredibly eventful, with ladders and lifts, various routes into and out of each room, teleport beams, and an enormous variety of deadly sprites barring your way.

The graphics aren't in the Knight Lore league, but they are very professional — all the graphics are nice and large, and smoothly animated. One little design feature that I liked was that when you collide with a sprite and lose a life, that sprite is destroyed, leaving your path clear to the next obstacle. This means that you don't keep on losing all your lives on the same obstacle, and stops you getting too frustrated by a particularly difficult task.

As well as the dynamite, there are a variety of other objects that you can collect — food to boost your energy level, and test tubes which contain serums that add to your number of lives — and of course, all are tucked away in tricky little corners.

My only doubt about the game, is that at £6.95 it is a little expensive, though not outrageously so.

C.J.

Price: £6.95

Publisher: Mirrorsoft

Address: Maxwell Hse, Worship St, London EC2A 2EN

SPECTRUM

REVIEWS

Nick Faldo Plays The Open

Icon driven games seem to be popping out of the woodwork at the moment, but this is the first sports simulation I've seen that uses them.

Before playing 'The Open', I thought that a golf simulation would probably turn out to be quite boring. The sports which usually lend themselves to computer games tend to be the frantic, action-packed ones such as football or tennis However, after a few holes it actually turned out to be quite enjoyable. It isn't an incredibly exciting game, but it is absorbing and quite challenging.

The icon menu offers a choice of clubs, close up or distant views of the current hole, strength of shot, and a rotating icon that determines the angle of your shot.

The choice of club is very important, and if you choose a club that is wildly inappropriate for the shot you are going to play, then your 'caddy' will ask if you are sure that's what you want to use

Each hole has a set of statistics accompanying it, including a 'par' score, and this adds a competitive edge to the game. I managed to get one hold down in par, and then I was hooked

The graphics are nicely done, and the icon system is very simple to handle (unlike the systems used in some other games). Like the real game, 'The Open' is addictive in a quiet sort of way, and once you've started it's hard to stop.

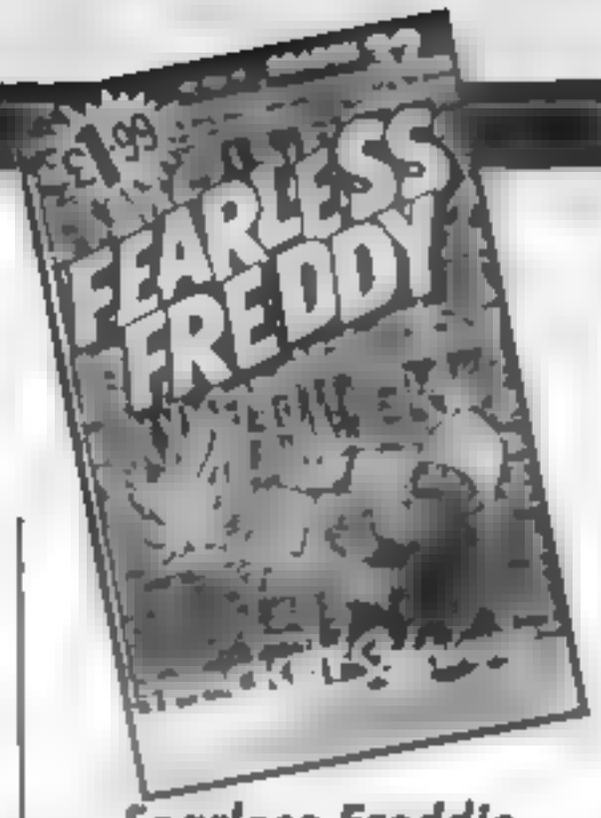
C.J.

Price: £9 99

Publisher: Argus Press Software

Address: Liberty House, 222 Regent St, London W1

SPECTRUM



Fearless Freddie

Any platform game worth its salt features lifts that carry the hero either up and down the screen or horizontally across it. Fearless Freddie exploits such lifts, as you move between various platforms, rescuing various possessions before they become engulfed in flame

In the true platform tradition, you must dodge the fireballs, collect the various objects, jump onto lifts and avoid landing in a burning cauldron. This is hardly original but the graphics are quite nice and this could have made a good value game for the Dragon

Unfortunately the whole execution of the program is exceedingly poor. The collision detection routines are among the worst that I have ever seen. Some of the objects are pretty large yet it did not always register when I walked over one of them. The quality of some of the movement in the game left an awful lot to be desired too. This is rather a shame, as the setting and a few nice touches, such as the thermometer, indicated that the program had the potential of being extremely entertaining.

The program represents, for me, all that is bad with budget software. A number of software houses think that they can put out any half-baked game at £1 99 or £2 50. Just because the product is cheap doesn't mean that it shouldn't be fully debugged and tested

A disappointing product made all the worse for the most appalling music that I have ever heard on a computer game. The tone-deaf renditions of Colonel Bogey and When the Saints were as painful to listen to as the game was to play.

C.G.

Price: £1.99

Publisher: Microdeal

Address: 41 Truro Rd, St Austell, Cornwall

DRAGON

Battle for Midway

An adaptation of a successful Commodore program — so don't be misled by joystick required label on the instruction manual — the cover correctly stating joystick compatible.

Three levels and six game speeds are offered. As the manual suggests, this is an extremely complex war game designed for the intellectual. However, when the organisation and rules are eventually learned, it is a fascinating brain teaser

Battle for Midway puts you in command of the United States Pacific fleet on June 4th 1942, six months after the Japanese attack on Pearl Harbour. This battle was the turning point of the battle for the Pacific and a landing upon Midway by the Japanese would have provided a stepping stone for them to attack Hawaii and then the United States.

You are presented with a large scale map showing an over-view of your forces, with a 24-hour clock at screen top, a white com-box controlled by you, and coloured dotted lines representing the three Japanese fleets involved. Six keys give access to information on the combatant forces at gamestart, with the game clock stopping. With the com-box over individual task forces gives detailed reports on ships and aircraft.

Units can be moved, aircraft launched and landed, as well as used to search and make air attacks. Of course, periodically the Japanese will launch attacks on you — the U.S. forces.

Unfortunately, the Japanese have beaten me every time so far, and Hirohito is President!

T.W.

Price: £9.95

Publisher: P.S S

Address: 452 Stanley Stanton Road, Coventry CV6 5DG

SPECTRUM

Flipped

Hooked

Keen

Yawning

Comatose

Music Studio

One thing I've noticed about Activision software is that in spite of its high price, it's slick and generally to a very high standard

This package reinforces this view. It provides a complete environment for the creation of music. Whilst some knowledge of music theory is necessary for first class results, a music "paintbox" is provided for the novice

In either of the two operation modes, you may use any one of 15 sounds, each with an identifying colour. These sounds are created by a sound engineering screen which offers complete control of all sound parameters. The screen depicts an instrument panel with sliders for the adjustment of the sound parameters. To give a final polish to your composition, you can vary the sounds whilst the tune is playing.

The main composer section allows the creation of sound by placing notes on two musical staves which scroll across the screen. The system works like the musical analogue of a word processor allowing the copying, editing and manipulation of the score. The full range of note types are supported and different sounds can be identified by the different colours of the notes. At any time you can save your composition and voice settings or get a hard copy of the score on your printer.

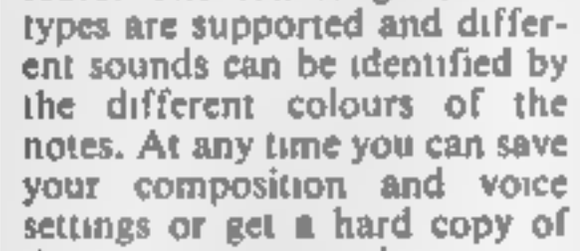
The music paint box functions in a similar manner but with less emphasis on musical theory. In all modes, icons are used with a joystick controlled pointer for the selection of options.

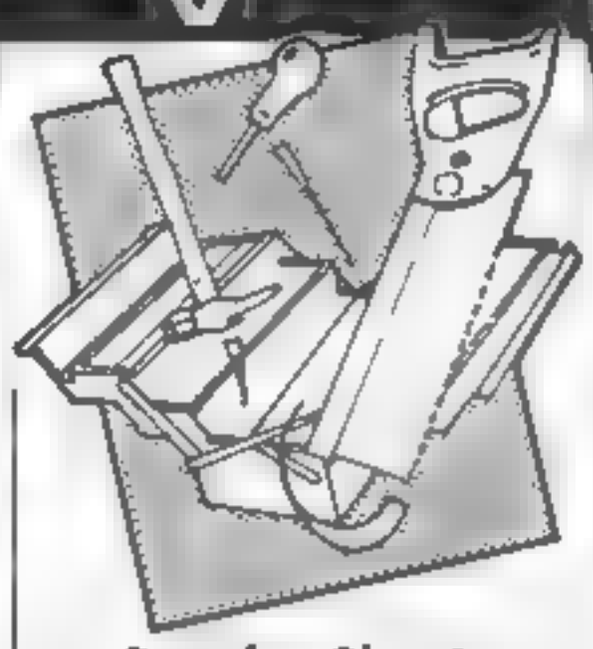
This package bristles with features and is really quite amazing . . . **R.W.**

Price: £14.99

Publisher: Activision

Address: 15 Harley House, Marylebone Rd, London NW1 5HF





Popular Classics

No, this is not a compendium of those games which have hit the software charts but an addition to Commodore's Music Maker. The package consists of a cassette and book. The book contains the music for twelve well known classical works, and the cassette has all that is needed for those pieces to be played on your Commodore 64. In addition, there are options included in the program for you to play along with the computer.

Among the options available is Concert mode. In this, the computer will run through its repertoire. My children loved this part as they listened and tried to spot the music from TV adverts. Another option is Single Key Mode — which allows the user to play along by just tapping out a rhythm on one key.

Rehearsal mode eases you through a selected piece; on screen, a finger points at the note and waits for you to play before moving on to the next note. This caused much hilarity among the family as I played The Hungarian Dance at my speed and was rewarded at appropriate intervals with intricate accompaniments.

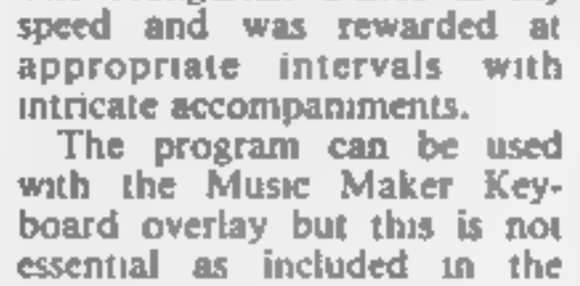
The program can be used with the Music Maker Keyboard overlay but this is not essential as included in the accompanying leaflet are instructions as to which computer keys to use.

Overall, this is a fun package. It won't turn you into a concert pianist overnight, but if, like me, you enjoy music and have never mastered an instrument, it may give you hours of fun and a sense of achievement as you play The Toreador's Song or Eine Kleine Nacht Musik. **M.W.**

Price: £9.99

Publisher: Commodore UK

Address: 1 Hunters Way, Weldon, Corby, Northants NN17 1QX



Tea Time

After a few hours of playing this little gem, I decided upon the phrase, "excellent game, naff title" as a summary.

The game is really three separate games, but very well linked together. You control a teapot and in the first game must collect drops of tea as they fall from the sky. The sponge that moves across the screen mops up as many drops as it can and will also empty your pot if you get close enough to it. You complete the game when you have collected 30 drops.

The second game has you dodging the sugar cubes (!) as they race down the screen à la "meteoroid dodge" and a whole generation of similar games. Playing this for a set time successfully, takes you onto the final stage, the larder, where using lifts and platforms you must collect all the tea that is on the larder shelves and finally reach your goal, the tea cosy

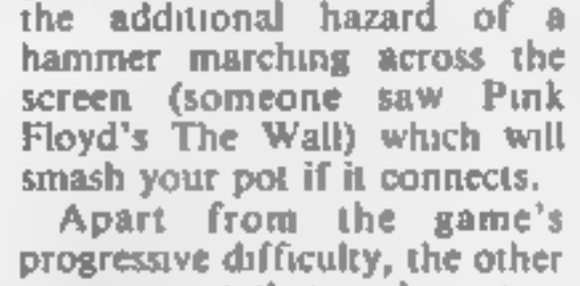
The program is a collection of tried and tested games but its addictiveness comes from the excellent design. Once you have finished these three screens, you go back to the first one but have the additional hazard of a hammer marching across the screen (someone saw Pink Floyd's The Wall) which will smash your pot if it connects.

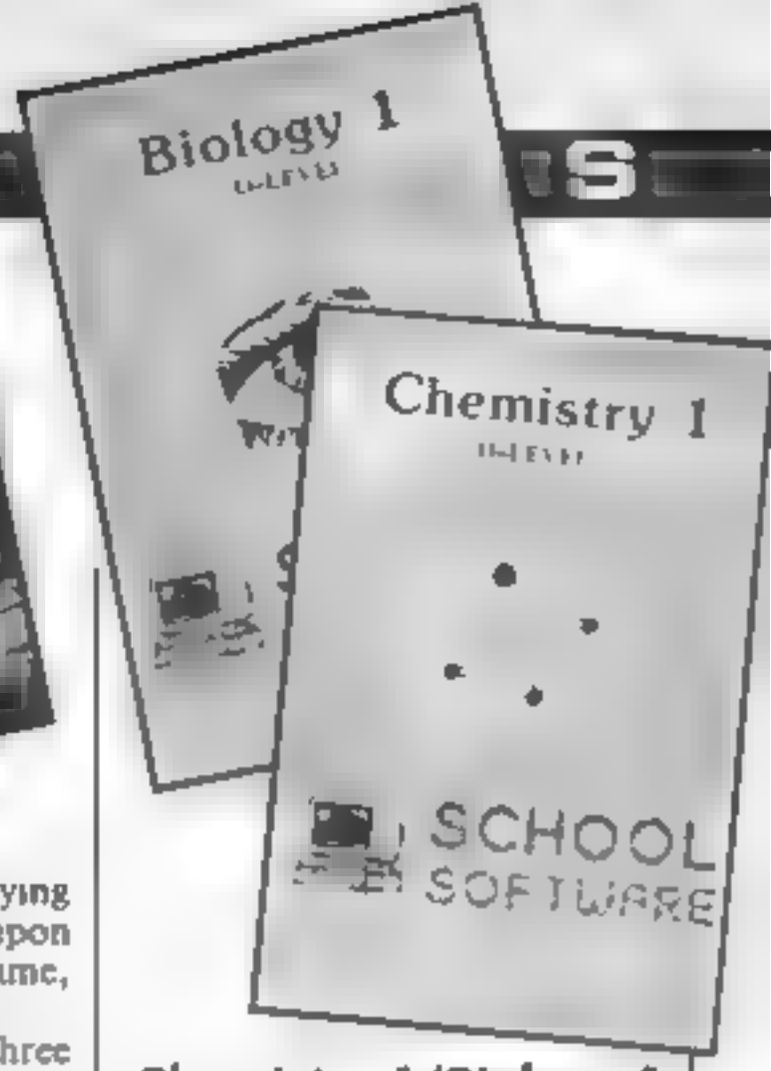
Apart from the game's progressive difficulty, the other strong point that sticks out in my mind is the graphics. They may not be Ultimate standard, but they are good by Dragon standards and the degree of surrealism which first found computerised expression in Manic Miner and its clones is wonderful. Add to this bonus scores, an excellent title page and a high score and well — why are you still reading — go out and buy it. **C.G.**

Price: £1.99

Publisher: Microdeal

Address: 41 Truro Road, St Austell, Cornwall





Chemistry 1/Biology 1

Though these tapes purport to be part of an educational "tuition" series, in fact they cannot teach, they merely check if you know what they know, and if you get the answer wrong first time, offer you one or two letters of the answer as a clue. Your score is then totted up at the screen and shown as a percentage. In other words it's the rather old hat quiz format.

Frankly, although the author has attempted to brighten things up with the use of a selection of colours weird sounds, together with an excruciating rendition of a classic melody in a single voice, the whole thing is very dull. Neither loading screen tells the name of the program, and a number of programming bugs are apparent in use.

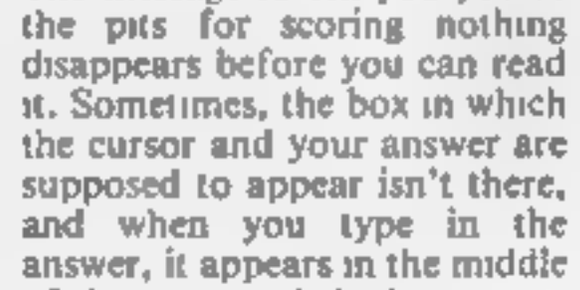
The score table shows five right answers and five wrong ones, but your score is 45%! The message to tell you you're the pits for scoring nothing disappears before you can read it. Sometimes, the box in which the cursor and your answer are supposed to appear isn't there, and when you type in the answer, it appears in the middle of the question! And to cap it all, there are spelling errors. This, in my view, is quite unforgiveable in a game, let alone an "educational" offering

In essence what you are offered here is one program with two sets of data for different subjects at a price that can only be described as extortionate Appalling. **D.M.**

Price: £7.95 (each)

Publisher: School Software Ltd

Address: Meadowvale, Raheen, Limerick, Ireland



Go To Hell

The press release accompanying this game says that it's "so different you're going to be hard pushed to do it justice!". But it isn't, and I'm not.

In fact it's not at all different, being just a maze game made up of some 50 odd screens of guillotines, deadly spiders, and an assortment of skulls, all depicted using fairly blocky graphics and a combination of colours that are a bit of a strain on the eye.

The game involves wandering around Hell, in search of a number of crosses needed to save a friend from eternal damnation. The maze is fairly standard stuff, tarted up by some gruesome graphics, but not likely to dethrone Knightlore from the top of my all time favourites list. The maze is large enough to make the game fairly challenging, though I found some of the corridors too narrow to allow much manoeuvring in order to fire at the objects around me.

I think it's revealing that Triple Six seems to be concentrating on the gruesome aspects of the game rather than on the quality of the game itself ("It's gruesome... parents will hate it... but everyone will want it"). In the end, no amount of grizzly graphics will be enough to convince me that this is anything other than a fairly average maze game.

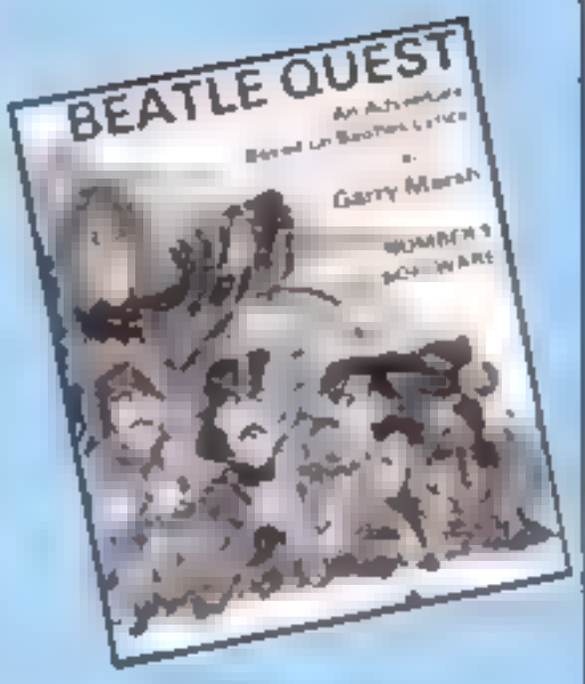
At £6.99 it's a bit expensive for a game that is really rather dated. **S.D.**

Price: £6.99

Publisher: Triple Six

Address: PO Box 190, Maidenhead SL6 1YX

SPECTRUM



Beatle Quest

The range of adventure games available nowadays is enormous. The scenarios range from outer space to pre-historic times. Some have hi-resolution graphics, music and animation, others incorporate arcade shoot-ups as part of the problem. So to make its mark, a new adventure has to be something special. Beatle Quest is good but not special.

It is an all text adventure, written using Quill and its claim to distinction is its theme — The Fab Four — John, Paul, George and Ringo. To solve the problems, it helps to delve back into the words of the songs they wrote which have become part of our pop-music heritage.

It takes 12 minutes to load Then you are in a nostalgic search for "various objects of interest to return them to the start location". It's not easy to get going and you soon discover that the "feeling you're being followed" is a warning that a certain Maxwell Edison is after you, silver hammer in hand. Very soon you'll suffer the fate of his school-teacher.

Publishers, Number 9 Software, offer two other titles in the same vein to form a trilogy — A Day in the Life, Part 2 and Across the Universe. But I can't say that my appetite is sufficiently wetted that I'll be looking out for them. **B.J.**

Price: £9.95

Publisher: Number 9 Software

Address: 47 St George's Avenue West, Wolstanton, Newcastle

C64

Happy Hour

Happy Hour is an arcade/adventure. The basic idea is simple. Visit as many pubs as you can, drink as much beer as you can, collect as much money as you can — points are awarded — whilst avoiding the law, the punk, and sundry dogs, bottles and cars etc. — until you fall over or get arrested.

On the left of the screen is a status panel showing the state of your head, the number of hours utilised and the number of pints consumed, together with the amount of money found. For the princely sum of 50p you can activate a pub locator which will tell you if there is a pub in the adjoining square. Don't catch the bus or go into the wrong house however, you get thrown out on your ear!

Although this isn't far away from the plot of Pi-Eyed, it's still fun to play, but, by today's budget game standard, it's let down by graphics. True it's all machine code, but the animation's not quite right, it's all rather flickery, screen changes are rather abrupt, the attempt at perspective is off, and when you enter a pub for a jar, the bar, and attendent bar-maid towers above the main character

Wobbly Wolf becomes more and more difficult to control as he sinks more pints. Strangely, no provision for joysticks is made, and, perhaps I'm a puritan, but would we be amused by a game which featured any other kind of addict getting a fix? **D.M.**

Price: £1.99

Publisher: Scorpio Gamesworld

Address: 307 Corn Exchange Buildings, Cathedral St, Manchester

SPECTRUM

A View To A Kill

The latest in a long line of games based on films/tv programs, A View To A Kill is actually quite good. Not great but still pretty enjoyable

The cassette includes three games based upon scenes from the film, plus an opening title sequence similar to that at the start of Bond films.

The first game is a sort of 3-D maze, representing the streets of Paris, through which you drive in order to catch May Day. The graphics are competent, but this is probably the least compelling of the games.

The second, set in the burning City Hall, is a simple icon driven adventure, in which you have to save both Bond and his henchperson, Stacey from the flames about to engulf the building. Though the icon system isn't as sophisticated as that used in Beyond's Shadowfire, its novelty and versatility make up for what might otherwise be a fairly standard hunt-the-object game.

But, my favourite game is the Silicon Valley Mine. This combines two different types of game to produce a hybrid platform game/icon driven adventure. This is similar in many ways to the old Oracle's Cave game, but is more sophisticated. Running and jumping through the cave network, you search for a bomb that must be defused. But you can also use the icon system which includes climbing gear and disarmament equipment.

None of the games are great individually, but the three together are good value. **C.J.**

Price: £10.99

Publisher: Domark

Address: 204 Worple Rd, London SW20

SPECTRUM

Slide

Cast your mind back, aged reader, to the Christmasses of your youth. Forget the holly, the sickly Christmas pudding and concentrate on your stocking Do you remember getting a slide puzzle usually consisting of 15 little interlocked squares with either letters or numbers on them. One section of the puzzle was empty allowing you to slide the other squares around creating either words or numerical sequences.

Microdeal has computerised such a puzzle and presented it on the Dragon for a bargain price of £1.99. On loading, you are presented with a choice of attempting the decimal slide puzzle, the hexadecimal variant or having a go at the hardest puzzle of the three — a map of the USA.

All three puzzles are set out neatly on the now familiar green background graphics mode. Moving the pieces around the puzzle is simply a matter of using the cursor keys though I found the movement just a fraction slow. The numerical puzzles consist of 40 individual squares making the puzzle quite a brainteaser. I must admit to failure though I got quite close. With these type of puzzles the only solution is time and patience (well, that's my excuse, anyway).

One fault is that there's no way to get back to the options menu. This means that if you give up on one puzzle, you must re-load to try another. This was the one major complaint on an otherwise enjoyable game

C.G.

Price: £1.99

Publisher: Microdeal

Address: 41 Truro Road, St Austell, Cornwall

Pit Fiend

Pit Fiend starts well with synthesised title music playing melody and backing chords. For anyone with a Dragon who can only coax a variable beep out of your machine, Pit Fiend's music is quite impressive — a version of the Entertainer.

The game is rather similar to Maziacs by Bug Byte which found its way onto the ZX81 and the Spectrum. You are a character wandering around a five-level dungeon searching for pieces of a broken shield Avoiding the Pit Fiends, you can go up or down various sets of stairs, visiting all the levels If you get close to a Pit Fiend you can throw a knife at it, striking it down immediately. I found the accuracy of these weapons a little suspect. You appear to have an unlimited number of knives to lob at the ghouls.

You can choose the colour background. I found that good old green background with red, yellow and blue foreground colour mode was the only one that was truly playable, the other two being rather painful on the eyes.

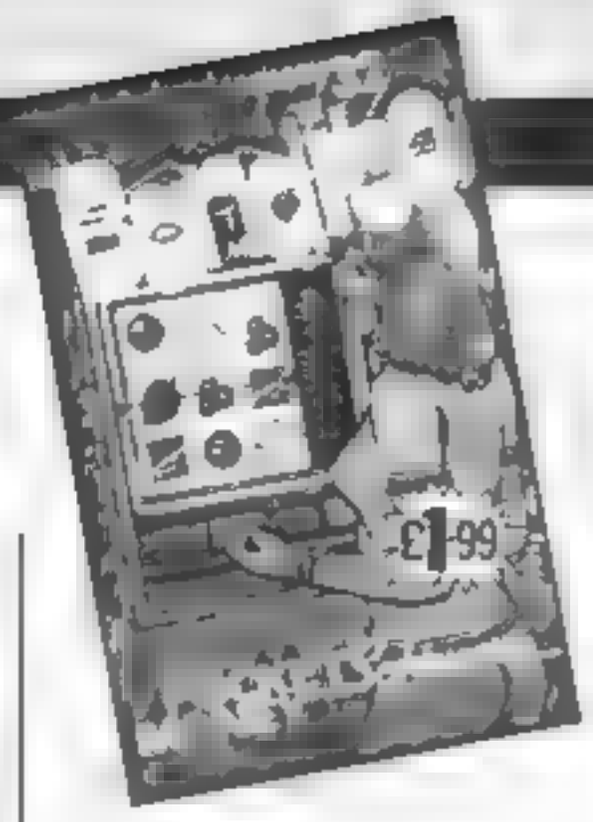
The game is too easy to solve, it took me just two tries before I had collected all the pieces of the shield without my oxygen running out On completing one shield, you start the game all over again

In conclusion, a fair game, but not really exciting or variable enough to make it a worthwhile purchase even at this price. **C.G.**

Price: £1.99

Publisher: Microdeal

Address: 41 Truro Road, St Austell, Cornwall



Bandito

Do you remember when you last strolled by the seaside and were lured by those arcade machine halls with names like Palace of Fun and Penny Falls? Inside, perhaps as a refuge from the rain, you were tempted to gamble some of your hard-earned cash in the vain hope of increasing your spending power? And the most enduring of these has always been the one-armed bandit

It has a hypnotic power of its own with the ability to keep you performing a hopeless task — accumulating more money!

This computer version captures a lot of that quality and, given a bag of vinegar — soaked chips by your side, accurately recalls for me those moments of refuge.

Unfortunately you have no choice of colour on this version which spoils an otherwise lovingly detailed fruit machine. Hi-res black on buff however does make everything crystal clear including the instructions.

You start with a pound and have to pay 10p a go. All money is added and deducted automatically on screen. Other features include nudge and hold which make this a very accurate simulation. The apples, pears, cherries and lemons are there with one or two little additions. It's so simple and quite addictive. As to how generous it is... well I managed to accumulate about four pounds before gradually going down below my original stake. I never managed to win the top payout of two pounds and I usually ended up the poorer. A good game therefore to have at a gathering of friends if you act as the bank!

M.P.

Price: £1 99

Publisher: Microdeal

Address: 41, Truro Road, St Austell, Cornwall

Robin Hood

Cheap software is good news and especially for those Dragon owners who feel a little isolated at the moment. Microdeal has long been associated with this computer and some of its best games.

The trick, as I understand it, is to design a playable game which has become old hat and re-hash it. In the case of this game that is what seems to be offered

You are Robin Hood and your mission is to rescue Maid Marian from the clutches of the wicked Sheriff of Nottingham. You struggle up-screen, collecting gold on your way, running and jumping onto platforms. The Sheriff is hurling stones down in Kong style and on the upper levels you also have to avoid arrows. The graphics are very good, smooth and certainly up to the best standards achieved in the more expensive games.

There is also a bonus screen should you rescue Marian which involves collecting falling hearts. But that is it.

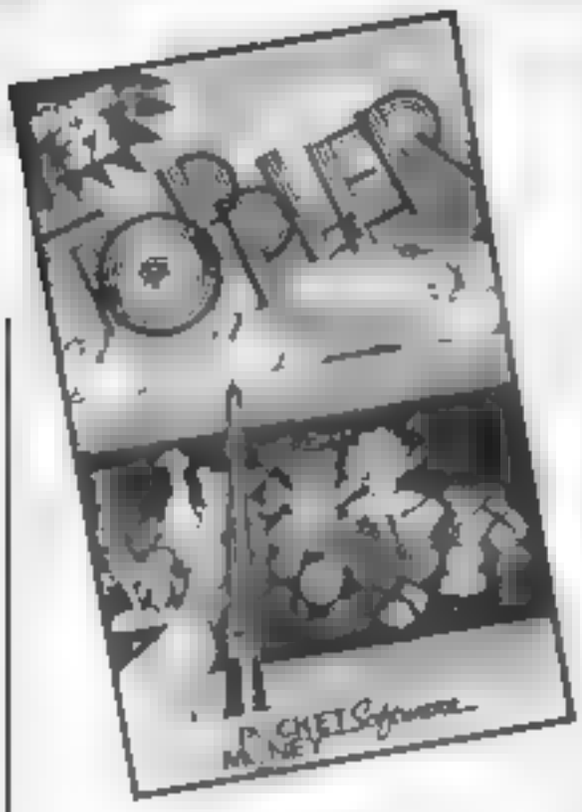
A joystick is needed to control Robin in what turns out to be a very playable little challenge. The rocks being thrown are accurate and should you be hit or fall off the platform you tumble into the moat below.

You are able to choose between black, buff and green screens and instructions are scrolled neatly at the beginning. This game, of the current batch of five I've been given, represents the best value. **M.P.**

Price: £1 99

Publisher: Microdeal

Address: 41 Truro Road, St Austell, Cornwall



Toppler

Roll up, roll up all the fun of the fair. Well, at least one of the stalls! A shooting gallery that offers you some fast moving targets.

With these pocket money games you aren't going to get much variety, with this one you are given an interesting challenge

At the beginning you can choose between black, buff and green backgrounds but it's best to go for the highest resolution, black. It's joystick controlled and once you have pressed the button the targets go across the screen from the top and snake down three levels in caterpillar style. You see a tin man, roller ball, rabbit and duck but there is also a bonus target which you have to avoid

You have 45 bullets to clear the 30 targets in a generous time limit of eight minutes. I never did go the whole length of time. One of the problems is that if you don't clear the ducks out quickly, by the time they've gone round three times you lose five bullets for each duck through. In addition to that if you hit a bonus target then not only do you lose that potential score but they all turn to ducks.

I never did get to the bonus screen where a tank is supposed to appear. This is an added incentive but after that you go back to the original gallery.

Quite an addictive game and demanding some skill in aiming your shots. At this price I would recommend it as one of the better cheapies. **M.P.**

Price: £1.99

Publisher: Microdeal

Address: 41 Truro Road, St Austell, Cornwall PL25 5JE

Data Fall

In the beginning there was the bat and the ball. Since then you have had a few variations: bat, ball and wall; tennis players; and, most recently, all action football players or basketball players. Now we are taking a few steps back again.

This game presents very little novelty and graphically is equivalent to something you can type in yourself from a published listing. Even that might make too favourable a comparison. It's one virtue is its cheapness.

Your catchers are at the bottom of the screen and moved left and right by the joystick. From the top various shapes come tumbling down in a randomised pattern which ensure that you have to frantically dash from side to side and prevent their landing.

That's it folks! If you let one through you lose a catcher. Keep clearing the screens and it speeds up a little unless you fall asleep first.

This, I'm afraid, is a bad example of budget software which should never see the light of shelf space. Particularly tragic as Dragon software is difficult to find in any shop. I can only hope that most people are going to take heed of the reviews which act as cautious guidelines. **M.P.**

Price: £1.99

Publisher: Microdeal

Address: 41 Truro Road, St Austell, Cornwall PL25 5JE

Bubble Blister

The quality of these cheap games varies a tremendous amount. You could go a long way before finding anything that is playable and satisfying.

To start with you can choose your colour background which also affects the detail hence most people stick to black. It is a game operated by one joystick which allows smooth control of what graphics there are. These are the good points.

The bad news is that all you do is move from left to right preventing bubbles, which look a trifle squashed, from landing at the bottom. You are given five catchers stacked one on top of the other which you must use to block the bubbles. If you let one through you lost a catcher and this makes it increasingly difficult to prevent further landings.

Three walls of these blisters are visible at the top of the screen and if you survive this wave then more appear. A score is accumulated but there are no further developments.

Visually, I find it quite attractive but not a game that will challenge you or keep you guessing. Not blisteringly addictive and could burst the bubble of success so far enjoyed by Microdeal, whose name is not revealed until the title screen loads — which is not surprising really! **M.P.**

Price: £1.99

Publisher: Microdeal

Address: 41 Truro Road, St Austell, Cornwall

Activity Centre

Having been flipped by Triangle from the same company, I eagerly loaded Activity Centre. The packaging seemed to herald a musical wordprocessor with hi-resolution graphics and animation. This I gotta see!

I suppose I had very high expectations, but I was disappointed. The tag "wordprocessor" is a bit optimistic. It's more a musical graphics package which permits text at the same time. Nevertheless, the possibilities of such a package are quite interesting. It could be used for educational quizzes, adventure games, etc. Minus the music and animation it could be used for poster design. Unfortunately Activity Centre proved not up to the quiz or games idea. It can't react to text, only display it.

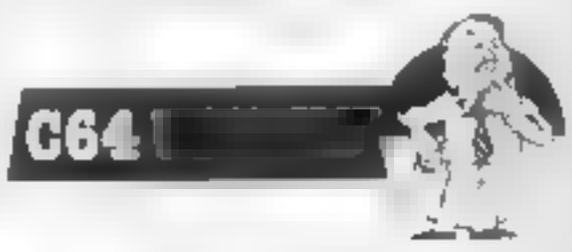
The graphics section allows text circles, boxes, and lines, freehand or joining two points. There is a copy command — useful — and a fill command which only fills rectangular areas — useless. Try filling a circle using oblongs! The animation section allows you to design two sprites and create a 50 step movement path. By moving both sprites together you can produce a moving bird with flapping wings. The music section involves loading a different program module. It gives the standard range of tempo, pitch and duration control; but for only one voice.

The biggest irritation is that it is all very slow, particularly the graphics routines, loading pages and switching from graphics to music and back. Overall I suppose it offers quite a lot at a reasonable price if you've got the patience. **B.J.**

Price: £14.95

Publisher: Argus Press Software

Address: Liberty House, 222 Regent St, London W1R 7DB



PROGRAM

C16 PROGRAM

MAZE

This is a version of the old favourite maze-style game from Stephen Rutterford

In this maze game for the C16 you control a little white man who starts at the top of the screen and has to work his way through the maze in the shortest possible time, using the quickest route.

There are three levels and the maze changes every time.

Press M to move your man up, Z will move him down X moves him to the right and X to left. Press I for the instructions and Q will Quit the maze and draw a new one for you. This is very important if the maze has no way through.

```
10 CLR:VOL5:POKE56,60:POKE55,0:POKE51,0:POKE52,60
20 FORI=15360TO15375:READA:POKEI,A:NEXT
30 FORI=15616TO15623:POKEI,0:NEXT
40 DATA223,223,223,0,247,247,247,0
50 DATA56,56,16,56,84,16,40,68
60 GOTO80
70 CLR:COLOR 0,1:COLOR 4,1:COLOR1,2,5
80 POKE65298,0:POKE65299,60
90 PRINT"■"
100 REM DRAW MAZE
110 FORY=3153TO3953STEP40:POKEY-1024,2:POKEY,0:POKEY+37-1024,2:POKEY+37,0
120 NEXTY
130 A=3194
140 FORC=1TO20
150 FORB=ATOA+35
160 R=INT(RND(1)*13+1)
170 IFR<M+3THENPOKEB-1024,2:POKEB,0:GOTO190
180 POKEB,32
190 NEXTB
200 A=A+40
210 NEXTC
220 TI$="000000"
230 GOTO250
240 SOUND1,300,5
250 L=3172:POKEL,1
260 REM
270 GETKEY O$
280 IFO$="I"THENPOKE65299,198:POKE65298,200:GOTO240
290 IFO$="O"THEN70
300 IFO$=","THENX=PEEK(L+1):IFX=0THENPOKEL,32:GOTO240
310 IFO$="."THENPOKEL,32:L=L+1:POKEL,1:SOUND1,600,1
320 IFO$="."THENX=PEEK(L-1):IFX=0THENPOKEL,32:GOTO240
330 IFO$="."THENPOKEL,32:L=L-1:POKEL,1:SOUND1,600,1
340 IFO$="Z"THENX=PEEK(L+40):IFX=0THENPOKEL,32:GOTO240
350 IFO$="Z"THENPOKEL,32:L=L+40:POKEL,1:SOUND1,600,1
360 IFO$="A"THENX=PEEK(L-40):IFX=0THENPOKEL,32:GOTO240
```

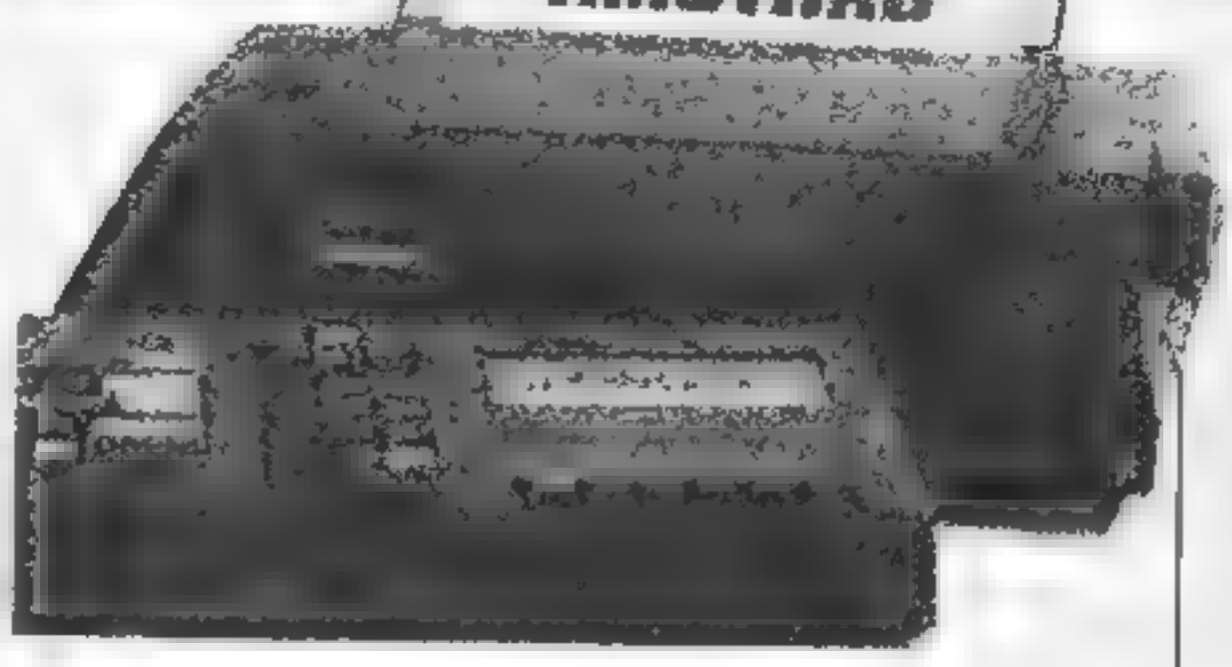
PROGRAM

```
370 IFO$="A"THENPOKEL,32:L=L-40:POKEL,1:SOUND1,600,1
380 IFL>3936THENGOTO410
390 IFL<3913THENPOKEL,32:L=L-40:GOTO350
400 GOTO260
410 POKE65296,193:POKE65303,208:COLOR0,15,2:COLOR4,15,2:COLOR1,2,5
420 PRINT"■"
430 IF TI$>"000130"THENPRINTTAB(11)"■■■■■■■10 YOU GET LOST ?":GOTO470
440 IF TI$>"000100"THENPRINTTAB(13)"■■■■■■■HAT KEPT YOU ?":GOTO470
450 IF TI$<"000010"THENPRINTTAB(15)"■■■■■■■BRILLIANT !!":GOSUB1070:GOTO470
460 PRINTTAB(14)"■■■■■■■ OU MADE IT"
470 PRINT:PRINT
480 PRINT"■■■■ OU TOOK "LEFT$(RIGHT$(TI$,4),2)" MINUTES AND "
490 PRINTRIGHT$(TI$,2)" SECONDS
500 FORT=1TO2000:NEXT
510 PRINTTAB(4)"■■■■■NOTHER GO ??"
520 PRINT:PRINTTAB(5)" ES OR NO"
530 REM
540 GETK$:P$=K$
550 IF P$="N"THENSYS32768
560 IFP$<>"Y"THENGOTO70
570 GOTO530
580 REM TITLE SCREEN
590 PRINT"■":I=2
600 COLOR0,1:COLOR4,1
610 COLOR1,2,4
620 PRINT"■■■■■■■
```

AMSTRAD

MACHINE CODE THE EASY WAY

David Ellis shows how to save your screens in the fourth part of our popular series



In the last article there was a list of comparisons between certain machine code and BASIC operations. Of particular interest were the two Z80 repeating block load instructions LDDR and LDIR. Using just two bytes of storage, they are very powerful. Try entering and running the BASIC program given in Listing 1. Lines 40 to 90, and 130 to 180, perform the same operations as the LDIR opcode. This is a repeating block load with **increment**. The addresses held in DE and HL are incremented on each loop. BC holds the count, and this is always decremented. When BC reaches zero, the loop ends. So what does the program do?

Well, the program saves a "mirror image" of what's on the screen to memory (lines 10 to 99). Lines 100 to 190 do the reverse and copy the contents of memory back to the screen. Try it by typing RUN to save the screen to memory, and RUN 100 to redisplay the screen. As you will see, it works, but at a snails pace! (about 3 minutes).

Now study Listing 2 which is the machine code equivalent. It's very similar to the BASIC program apart from the LDIR opcode which replaces all those BASIC lines. Try entering the values in the DATA statements by using the BASIC LOADER as given in the first article.

To save the screen to memory (after RUNning the BASIC program) enter CALL 30000. The program will take well under a second to complete. To recall the screen contents just enter CALL 30012. The screen contents should be re-displayed in about the same time.

A better example of the difference between the speed and memory requirements of BASIC and machine code would be hard to find. The program will work equally well in Mode 0, 1 or 2.

One small problem does arise, and this is that the screen offset must be the same at both the saving and the re-displaying of the screen.

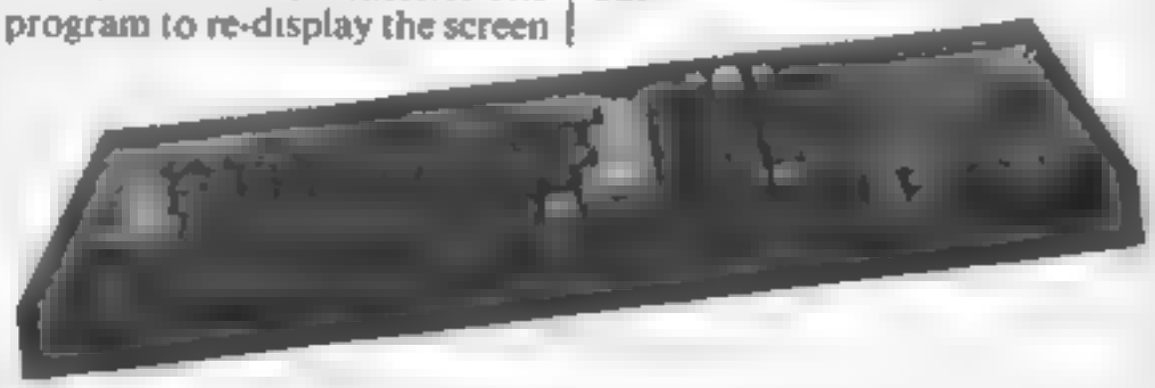
One way to make sure that the offset is always the same, is to issue a MODE command. This will always set the offset to zero. Although this program works well, it does take 16K of memory to store the data on the screen. If you just want to save the text of a MODE 2 screen (including all the ASCII graphics characters) then this can be done using just 2000 bytes, which is far more efficient. A routine exists, called via the 'jumpblock' (&BB60), which will return the character at the present text cursor to the Accumulator. All that needs doing is to set the cursor to each of the 2000 screen locations, and store the characters to memory. Listing 3 gives the details of the two routines, together with the machine code numbers to enter in the DATA statements.

In the first program two loops are set up. The inner loop counter is held in the H register, and this holds the horizontal co-ordinate of the screen. The outer loop counter is held in the B register which holds the vertical co-ordinate. Two calls are made via the jumpblock — one to position the cursor, the other to find the ASCII value of the character at that cursor position. This ASCII value is returned in the Accumulator. If the character cannot be found in the "character table" (e.g. if it is a graphics line) then a value of zero is returned. The character is then stored to memory and the memory pointer (DE) is decremented. This is repeated until all 2000 characters are completed.

Despite being in machine code, this will still take about 10 to 15 seconds to run, mainly due to the time taken to search through the character table for each of the 2000 characters. The program to re-display the screen is somewhat different, and also a lot quicker. The BC register holds the count of 2000, and the DE register the memory address, as before. The routine called at &BB5D not only writes the contents of the accumulator to the screen at the present cursor position — it also positions the cursor at the next screen position — very useful! Unfortunately, this routine does corrupt the DE and BC registers, which is why they are PUSHed onto the stack before calling it and then POPped off the stack on return from the routine. The BC register is used as the loop counter in the same way that we used it in the second article. The last three lines of the machine code program just re-position the cursor to the top of the screen. The routines could be improved, but I have used them as they are the most easily understood methods.

Enter the two machine code programs by using the BASIC LOADER program and the machine code numbers given in the give DATA lines. Once you have RUN the BASIC program CALL 30000 will save the screen contents to memory (from &6D31 to &7500), and CALL 30027 will redisplay the memory contents to the screen.

Try them out and you'll be impressed. The same comments as before apply to the screen offset. In fact, the machine code routines to get the offset and set the offset were given in my RSX series (issue 103). See if you can "tag" them onto these two routines so that the offset value is first saved along with the screen data, and then reset when the data is loaded back to the screen. The DATA listings will be given in the next article in case you cannot fathom it out!



```
10    LET DE = &3500
20    LET HL = &C000
30    LET BC = 16384
40    WHILE BC <> 0
50    POKE DE,PEEK(HL)
60    DE = DE + 1
70    HL = HL + 1
80    BC = BC - 1
90    WEND
99    END

100   LET DE = &C000
110   LET HL = &3500
120   LET BC = 16384
130   WHILE BC <> 0
140   POKE DE,PEEK(HL)
150   DE = DE + 1
160   HL = HL + 1
170   BC = BC - 1
180   WEND
190   END
```

BASIC PROGRAM TO SAVE SCREEN DISPLAY

LISTING 1

```
30000    LD DE,&3500      17  &00  &35
30003    LD HL,&C000      33  &00  &C0
30006    LD BC,16384      01   00   64
30009    LDIR            237  176
30011    RET             201

30012    LD DE,&C000      17  &00  &C0
30015    LD HL,&3500      33  &00  &35
30018    LD BC,16384      01   00   64
30021    LDIR            237  176
30023    RET             201


100 DATA 17,&00,&35,33,&00,&C0,1,0,64,237,176,201
110 DATA 17,&00,&C0,33,&00,&35,1,0,64,237,176,201
```

MACHINE CODE PROGRAM TO SAVE SCREEN DISPLAY

LISTING 2

```
30000 LD DE,&7500     17 &00 &75    (Start of storage area)
      LD B,25          6  25        (Number of lines)
START LD L,B         104            (Transfer to L)
      LD H,80         38  80        (Number of columns)
 LOOP PUSH HL        229            (Save HL)
      CALL &BB75     205 &75 &BB    (Sets the cursor)
      CALL &BB60     205 &60 &BB    (Puts character in A)
      LD (DE),A       18            (Store to memory)
      DEC DE          27            (Next memory location)
      POP HL         225            (Restore HL)
      DEC H           37            (Next column)
      LD A,H         124            (Transfer to A)
      CP 0           254  0         (Is it zero?)
      JR NZ LOOP      32  240       (Jump to LOOP if not)
      DJNZ START      16  235       (Next row if not zero)
      RET            201            (All done - return )
```

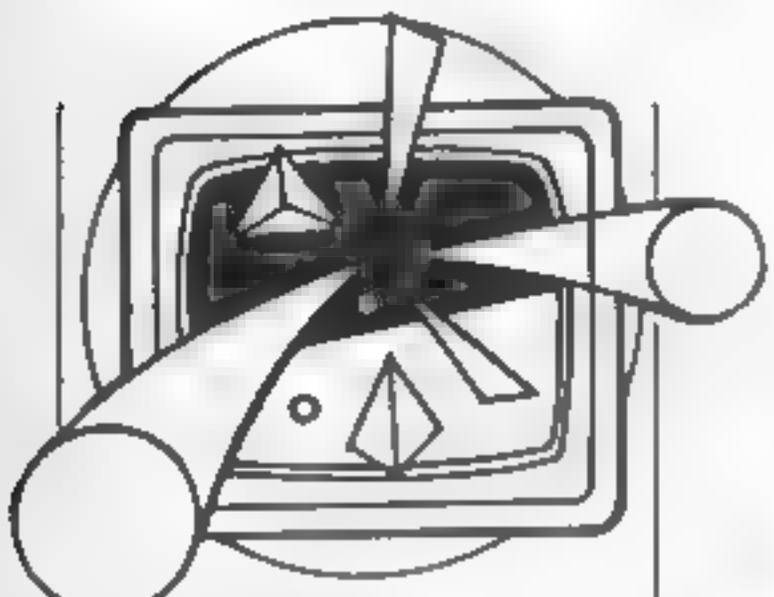
STORE MEMORY TO MODE 2 SCREEN (&6031-&7500)

```
30027 LD HL,&0101     33 &01 &01    (Row 1...Column 1)
      CALL &BB75     205 &75 &BB    (Set the cursor)
      LD DE,&6031     17 &31,&6D    (Start of data)
      LD BC,2000       1 208   7    (Number of characters)
LOOP  LD A,(DE)       26            (Get character in A)
      PUSH DE         213            (Save DE)
      PUSH BC         197            (Save BC)
      CALL &BB5D     205 &5D &BB    (Write to screen)
      POP BC          193            (Restore BC)
      POP DE          209            (Restore DE)
      INC DE           19            (Next character)
      DEC BC           11            (Decrement count)
      LD A,B          120            (Transfer B to A)
      OR C            177            (Check if zero)
      JR NZ LOOP       32 242        (Jump to LOOP if not zero)
      LD HL,&0101     33 &01 &01     (Reset the cursor to)
      CALL &BB75     205 &75 &BB    (the top of the screen)
      RET            201            (Should be all done)
```

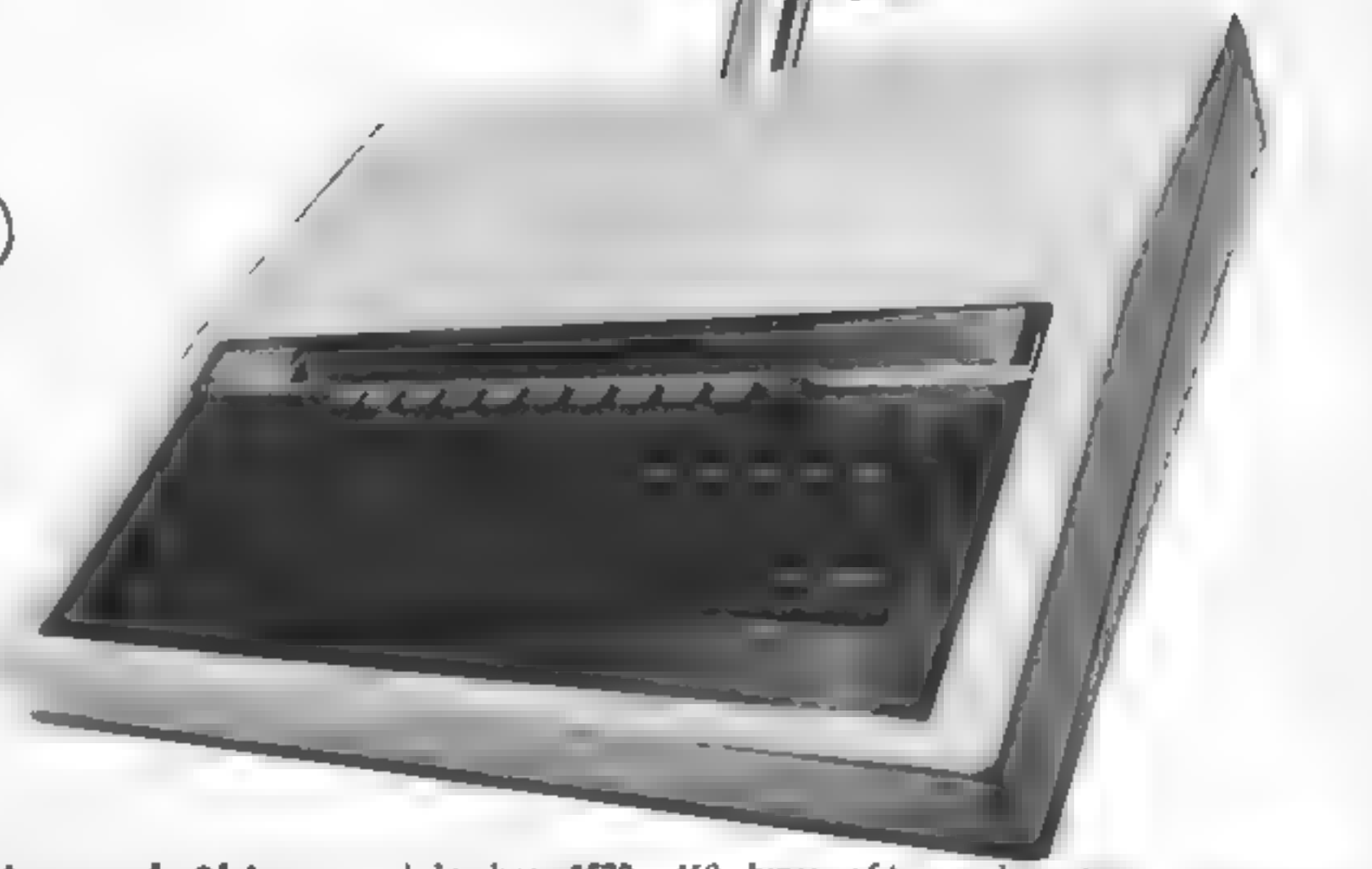
LISTING 3

```
100 DATA 17,&00,&75,6,25,104,38,80,229,205,&75,&bb
110 DATA 205,&60,&bb,18,27,225,37,124,254,0,32,240,16,235,201

200 DATA 33,&01,&01,205,&75,&bb,17,&31,&6d,1,208,7,26,213,197
210 DATA 205,&5d,&bb,193,209,19,11,120,177,32,242,33,&01,&01
220 DATA 205,&75,&bb,201
```



UPGRADING WINNER



This week Shingo Suglura ties up all the loose ends in the last of his series on graphics for the BBC

This week, I have listed the rest of the program we have been studying As you can see, there is rather a lot of assembly language. I didn't want to include any machine code when I first decided to do this series but I'm afraid BASIC is just not fast or powerful enough when it comes to dealing with numbers at bit level. However, you don't have to understand what each line does. All you need to know is what the various sections handle. So here is a brief run-down.

In line **1570**, 450 bytes of memory is reserved for the machine code routines

1580-1590 define various constants

1620 this is where the machine code starts

1620-1930 this routine prints a character in the enlarged 8x8 editing grid and also prints the numbers for each row. Each row is broken down into individual bits and if there is a 1, a white block is printed, otherwise, a full stop is printed. This is done for all eight rows.

1940-2000 is a general routine for printing an eight-bit number in hexadecimal

2130-2380 deals with the rotation of the character

2390-2440 turns the current character under development upside down and prints it on the editing grid by calling the first machine code routine

2450-2480 this routine reserves the current definition of character 255 in a safe part of the memory

2490-2510 this routine restores the old definition of character 255

2540-2580 this is a general function which returns -1 if Y is pressed in response to "Are you sure" prompt

2590-2640 general purpose input routine

2650 this function returns the lowest significant byte of a 16-bit number

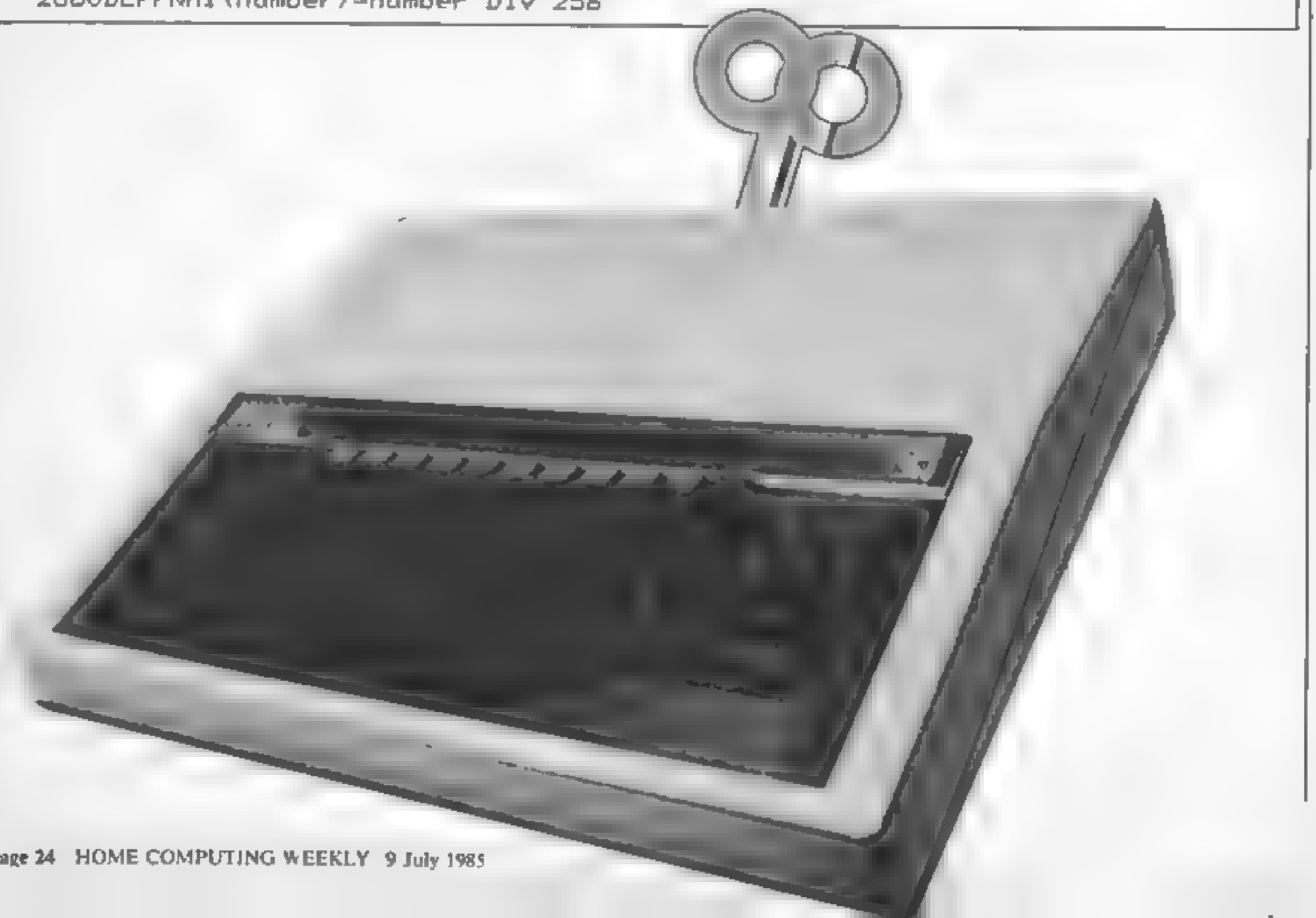
2660 this function returns the highest significant byte of a 16-bit number

Although I haven't explained any of the routines in any detail, I hope you can now understand the general structure of the program and I hope you will find it useful.

```
1560DEFPROCassemble
1570DIM code 450
1580osword=&FFF1:oswrch=&FFEE:osnewl=&FFE7
1590char=&70:space=char+11:spare=&B00
1600FOR pass=0 TO 2 STEP2:P%=code
1610[OPT pass
1620.enlarge
1630LDA#26:JSRoswrch:LDA#31:JSR oswrch:LDA#1:JSRoswrch:L
DA#2:JSRoswrch
1640LDA#255:STAchar:LDA#&A:LDX#FNlo(char):LDY#FNhi(char)
:JSRosword
1650LDY#1:.outer
1660LDA char,Y
1670LDX#8:.inner ASL A:BCC dot
1680PHA:LDA #17:JSR oswrch
1690LDA #129:JSR oswrch:LDA #32:JSR oswrch
1700LDA #17:JSR oswrch:LDA #128:JMP next
```

```
1710.dot PHA:LDA#46
1720.next JSR oswrch
1730PLA:DEX:BNE inner
1740JSR newline
1750INY:CPY#9:BNE outer
1760LDX#8:.cursor
1770LDA#9:JSR oswrch:LDA#11:JSR oswrch
1780DEX:BNE cursor
1790LDA #31:JSR oswrch:LDA#15:JSR oswrch:LDA#1:JSR oswrch
1800LDA char:JSR oswrch
1810LDX#0:.s_loop
1820LDA char+1,X:STA char,X
1830INX:CPX#8:BNE s_loop
1840RTS
1850.newline PHA:TYA:PHA:TXA:PHA
1860LDA#9:JSR oswrch:JSR oswrch
1870LDA char,Y:JSR hex
1880LDA#10:JSR oswrch
1890LDA#8
1900LDX#12:.line
1910JSR oswrch
1920DEX:BNE line:PLA:TAX:PLA:TAY:PLA
1930RTS
1940.hex
1950PHA:LSR A:LSR A:LSR A:LSR A
1960JSR digit:PLA
1970.digit
1980AND#15:CMP#10:BCC clear
1990ADC #6
2000.clear ADC#&30:JMP oswrch
2010.define
2020LDA#23:JSRoswrch:LDA#255:JSRoswrch
2030LDX#0:.d_loop
2040LDA char,X:JSR oswrch
2050INX:CPX#8:BNE d_loop
2060JMPenlarge
2070.upturn
2080LDX#0:.up_loop
2090LDA char,X:PHA:INX:CPX#8:BNE up_loop
2100LDX#0:.loop_up
2110PLA:STA char,X:INX:CPX#8:BNE loop_up
2120JMPdefine
2130.rot_right LDA#255
2140STA char:STA space
2150JSR rotate:JSR rotate:JSR rotate:LDA char:JMP enlarge
2160.rot_left LDA#255
2170STA char:STA space
2180JSR rotate:LDA char:JMP enlarge
2190.rotate
2200LDX #FNlo(char):LDY #FNhi(char)
2210LDA #&A:JSR osword
2220LDX #FNlo(space):LDY#FNhi(space)
2230LDA #&A:JSR osword
2240LDX #char+1
2250LDY #space+8
2260.rot1
2270ROL 0,X:TXA:STY char+9:LDX char+9:ROL 0,X
2280TAX:INX:CPX #char+9:BNE rot1
2290LDX #char+1
2300DEY
2310CPY #space
2320BNE rot1
2330LDA #23:JSR oswrch:LDX #0
```

```
2340.rot2
2350LDA space,X:JSR oswrch
2360INX:CPX #9
2370BNE rot2
2380RTS
2390.mirror
2400LDX#0:.m_loop LDA char,X
2410LDY#8:.re_loop
2420ROL char,X:ROR A:DEY:BNE re_loop
2430STA char,X:INX:CPX#8:BNEm_loop
2440JMPdefine
2450.reserve:LDA#255:STA spare:LDA#&A:LDX#FNlo(spare):LDY#FNhi(spare)
2460JSRosword:LDA#&A:LDX#FNlo(char):LDY#FNhi(char):JSRosword
2470LDA#23:JSRoswrch:LDA#255:JSRoswrch:LDX#1:.cop_loop
2480LDAchar,X:JSRoswrch:INX:CPX#9:BNEcop_loop:JMPenlarge
2490.restore
2500LDA#23:JSRoswrch:LDX#0:.res_loop
2510LDAspare,X:JSRoswrch:INX:CPX#9:BNEres_loop:RTS
25201NEXT
2530ENDPROC
2540DEFFNyes
2550PRINTCHR$7"Are you sure?";
2560REPEATB$=GET$
2570UNTILB$="Y" OR B$="N"
2580IF B$="Y" =TRUE ELSE =FALSE
2590DEFFNinput(prompt$,min%,max%,len%)
2600PRINTprompt$;:st$="":Z%=0
2610REPEAT Z$=GET$
2620IF Z$=CHR$127 AND LEN st$>0 st$=LEFT$(st$,LEN st$-1):PRINTZ$;
2630IF ASCZ$>=min% AND ASCZ$<=max% AND LEN st$<len% st$=st$+Z$:PRINTZ$;
2640UNTILZ$=CHR$13:PRINT:=st$
2650DEFFNlo(number)=number MOD 256
2660DEFFNhi(number)=number DIV 256
```



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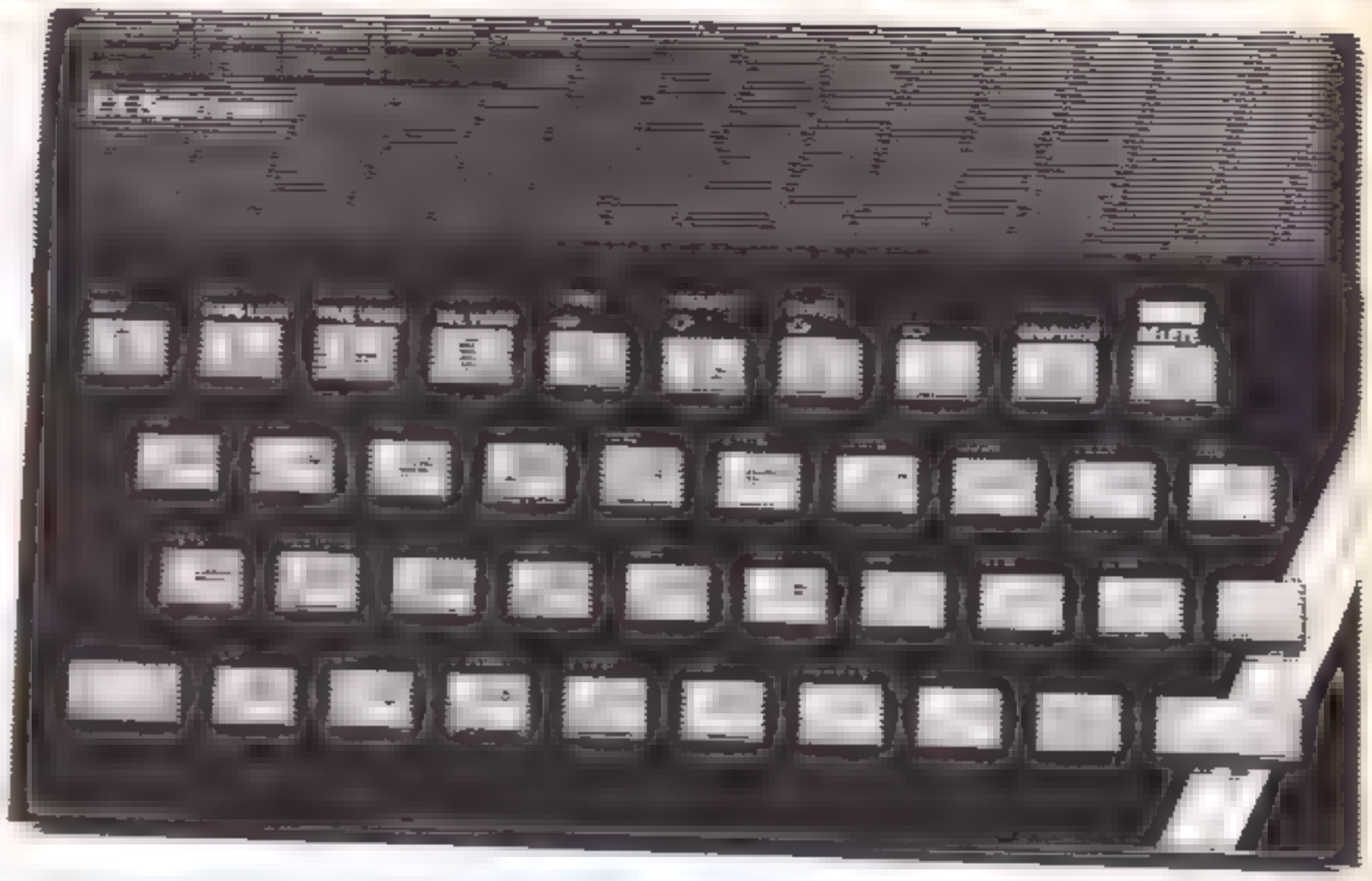
BEGINNING MACHINE CODE



It's time to see if it all ADDs up in our Spectrum machine code for beginners series from Diana and Colin Smith

In this, the third in our series, we are going to cover machine code single byte arithmetic and the conditional instructions equivalent to BASIC IF/THEN statements

But first, did you try resizing the sprite in Part 2?

To make a 4 x 2 character sprite, address 30015 should hold 4 and address 30032 should hold 2. The 8 sprite characters would then be held in addresses 30042 to 30049

Let's start by introducing binary arithmetic which is used by the computer. This is counting to base 2 rather than to base 10 or the decimal arithmetic we humans use. A number between 0 and 255 is stored as a **BYTE**. This byte consists of eight BInary digiTS or **BITS**. In the computer, a bit is really a switch that is either on (SET) or off (RESET)

A useful analogy is to count on your eight fingers. If a finger is raised (SET) it represents a power of 2, if not (RESET) it represents zero. By adding up the values of the raised fingers, you get the value of the byte This is illustrated in Fig 1

A consequence of having just eight fingers (or bits) is that you can't have a byte with a value of more than 255 or less than 0.

Fig 1.

```
Power of 2 (or bit number)
     7  6  5  4 3 2 1 0
Bit ON = 1 or OFF = 0
     1  1  1  1 1 1 1 1
Value of bit
   128 64 32 16 8 4 2 1  = 255
                    Value
                  of byte
```

Example

```
     7 6 5 4 3 2 1 0
Bit ON = 1 or OFF = 0
     0 0 0 0 1 1 0 1
Value
     0 0 0 0 8 4 0 1  = 13
                    Value
                  of byte
```

The byte value behaves in a circular manner. Mathematicians say it has a value modulus 256. If you exceed 255 you start counting at zero again

e.g. 250 + 8 = 2
(Calculate as 250 + 8 (-256))

If you do a subtraction which would go below zero, you continue counting down from 255

e.g. 5 - 10 = 251
(Calculate as 5 - 10 (+256))

For single byte arithmetic, the A register Accumulates the answer. So the instruction ADD A,B takes the value in the A register, adds it to the value in the B register and stores the answer back in the A register. Similarly, SUB (HL) takes the value of the A register, subtracts from it the value in the memory address held in HL and then stores the answer back in the A register

You may now be asking yourself, "Can I tell if an addition has given a result greater than 255?". Luckily the answer is yes, or we really would be in trouble. Such an addition gives a "carry" bit with nowhere to store it in the A register. Instead, the clever little microprocessor transfers the carry to the Carry Flag. This is a bit within a additional register called the F or Flags Register. This register is not used to store numbers. Instead, individual bits within the register are used to tell us more about the last calculation or operation on the A register

If an ADD instruction results in a carry, the Carry Flag is SET, otherwise it is RESET. If the answer is zero, the Zero flag is SET, otherwise it is RESET. The Sign flag is SET if a subtraction gives a negative result, but remember that the answer in the A register will still be positive

The microprocessor adjusts these flags automatically and we can test them if we need to

So far we have been using the RET instruction to return from our machine code routines to BASIC. This is an unconditional instruction. There are similar but conditional return instructions such as.

RET Z — return if ZERO flag is set
RET NZ — return if ZERO flag is not set
RET C — return if CARRY flag is set
RET NC — return if CARRY flag is not set

Also, there are other, less commonly used, return instructions.

Let's try an example. If you don't have an assembler, load the decimal loader program from the first article in the series. Make up a DATA statement containing the byte values of Listing 1. Run the loader and key RAND USR 30000 ENTER.

In our example, the code prints CHR$ A only if we have exceeded 255 in the A register. For single byte numbers, the

ADD instruction always adds a number to the value already in the A register. If the sum exceeds 255 the carry flag is set It's like adding 9 and 5 on your fingers: you have to remember that you have gone past 10.

You can ADD to the A register either a number, the value of a register or the contents of memory at the address stored in HL. You can also do this with the SUB, ADC, SBC, INC, DEC and CP instructions ADC or ADd with Carry will do an addition as described above but will add one if the carry flag is set SuBtract with Carry, SBC, operates similarly. So see this in action, load and run the code in Listing 2, using PRINT USR 30000 ENTER.

INC B increases the value in the B register by one and conversely DEC C reduces the value in the C register by one As an example load and run Listing 3 code with RAND USR 30000 ENTER

The CP or ComPare instruction is used very often. It is a special form of the SUB instruction which only affects the flags and does not change the contents of the A register. Table 1 shows the machine code equivalents of the BASIC state IF (operation) THEN RETURN. You could substitute one of the other arithmetic operations such as ADD or SUB in place of CP if it is needed in your routine.

In some examples, we have been using the unconditional CALL instruction to call a ROM subroutine. Conditional CALL instructions also exist, so CALL Z, address is equivalent to the BASIC statement IF (operation) THEN GOSUB (line number). You can also have the equivalent of GOTO. The JP,address instruction will JumP directly to the given address.

The JR,dis instruction will jump a specified number of displacement bytes relative to the next instruction. The way of counting this displacement is the same as described for the DJNZ,dis instruction covered in Part 2 of this series. If you have an assembler, it will do the calculations for you. Listing 4 prints the larger of the values in the A and B registers. You could play with this by POKING different numbers into addresses 30006 and 30008 before running the code with RAND USR 30000 ENTER

Table 1.

IF... THEN Constructions

For single byte comparisons

BASIC	ASSEMBLER		
IF x ( ) y THEN RETURN	LD A,x	CP y	RET NZ
x = y	LD A,x	CP y	RET Z
x) y	LD A,x	CP y	RET NC
x (y	LD A,y	CP x	RET NC
x < y	LD A,x	CP y	RET C
x > y	LD A,y	CP x	RET C

In assembler, x may be a number, a register or an indirect address. The A register could also be loaded with a direct address. RET could be substituted by CALL — equivalent to BASIC GOSUB — or by JP or JR — equivalent to BASIC GOTO.

Listing 1

```
30000 LD   A,2      62  Print to screen
                    2
30002 CALL 5633     205
                    1
                    22
30005 LD   A,221    62  A=221
                    221
30007 LD   B,100    6   B=100
                    100
30009 ADD  A,B      128 A=A+B
30010 RET  NC       208 Return if carry flag not set
30011 RST  16       215 Print A
30012 RET           201 Return
```

Listing 2

Example of ADC

```
30000 LD   BC,0     1   B=0, C=0
                    0
30003 LD   A,200    62  A=200
                    200
30005 ADD  A,60     198 A=200+60=4, carry flag set
30007 LD   A,0      62  A=0, clear A
                    0
30009 ADC  A,0      206 Add with carry A=0+0+carry(1)
                    0
30011 LD   C,A      79  C=A=1
30012 RET           201 Return
```

Listing 3

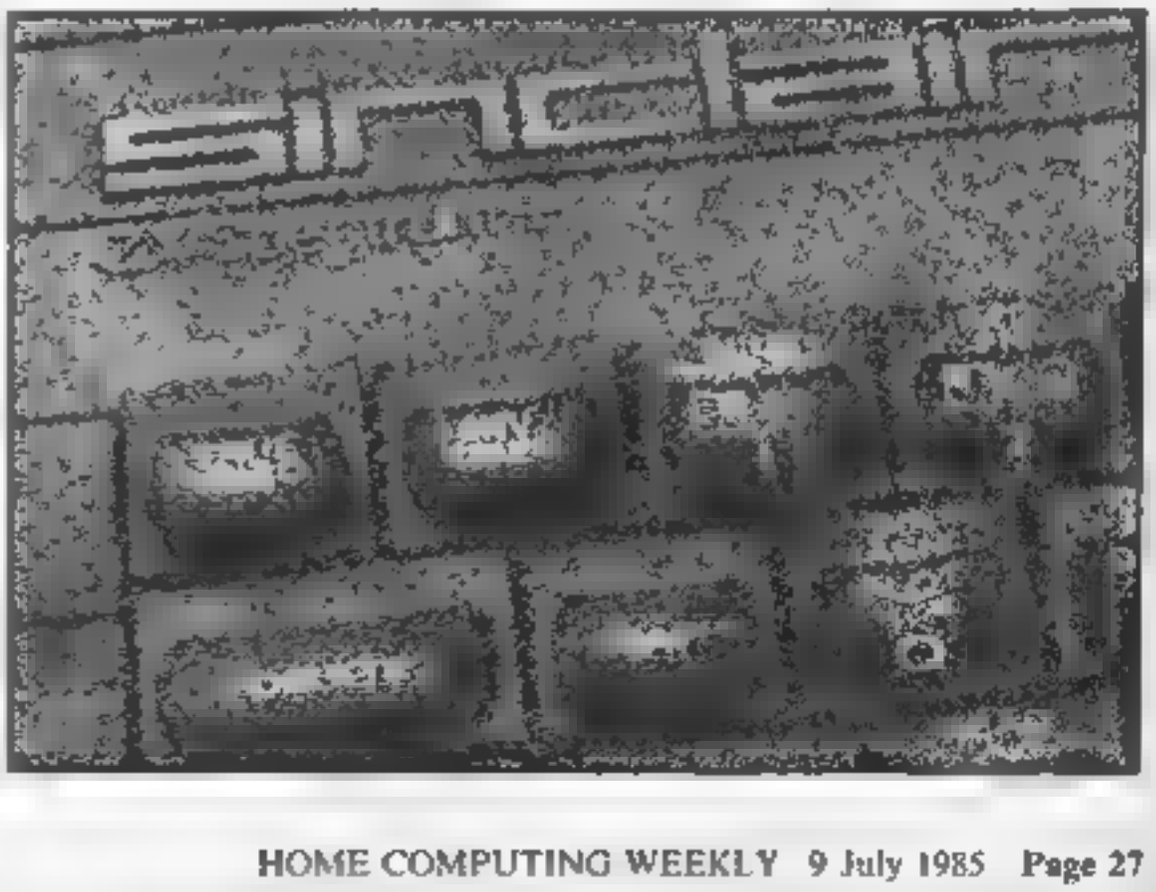
Example of INC

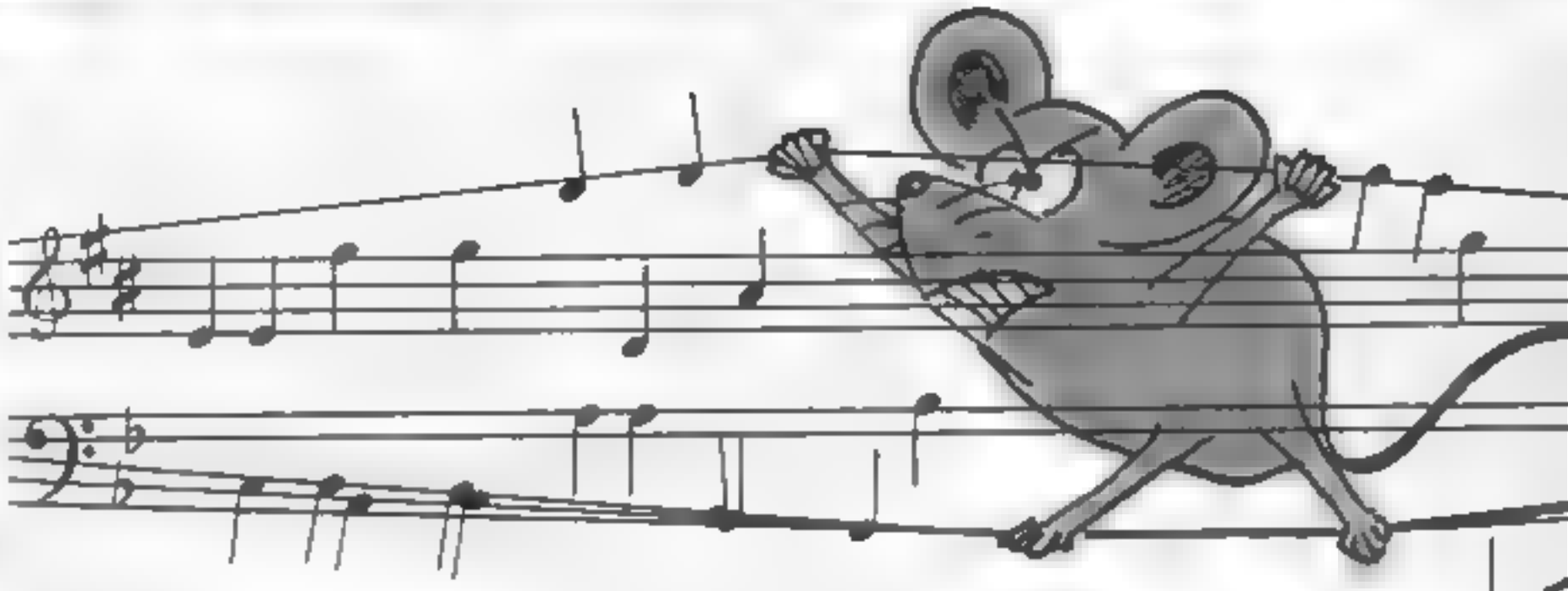
```
30000 LD   A,2      62  Print to screen
                    2
30002 CALL 5633     205
                    1
                    22
30005 LD   C,97     14  CHR$ a
                    97
30007 LD   B,26     6   26 letters of the alphabet
                    26
30009 LD   A,C      121 Let A hold C
30010 RST  16       215 Print A
30011 INC  C        12  C=C+1
30012 DJNZ 251      16  Next character?
                    251
30014 RET           201 Return
```

Listing 4

Example of CP and JUMP

```
30000 LD   A,2      62  Print to screen
                    2
30002 CALL 5633     205
                    1
                    22
30005 LD   A,56     62  A=56
                    56
30007 LD   B,48     6   B=48
                    48
30009 CP   B        184 A≥B?
30010 JP   NC,30014 210 Yes, jump to 30014
                    62
                    117
30013 LD   A,B      120 No, LET A=B
30014 RST  16       215 Print
30015 RET           201 Return
```





MUSICAL MOUSETRAP

AMSTRAD CPC464

J Keneally has come up with a simple but challenging strategy game, that also makes good use of the Amstrad's sound commands

This is a simple game that doesn't take weeks to type in, but needs some quick strategic thinking to play well. The object is to trap the mouse (a diagonally moving dot) into a small area in the top left of the screen in the shortest possible time (lowest score is the best)

You will soon get to know how small the area has to be Barriers are drawn using the four cursor keys, and you can remove a barrier by holding down the SPACE key as well as a cursor key. Barriers can only be drawn horizontally or vertically.

Most of the BASIC commands available for controlling the sound chip have been used in the game, so it is worth studying if you want to know how these can be used in practice.

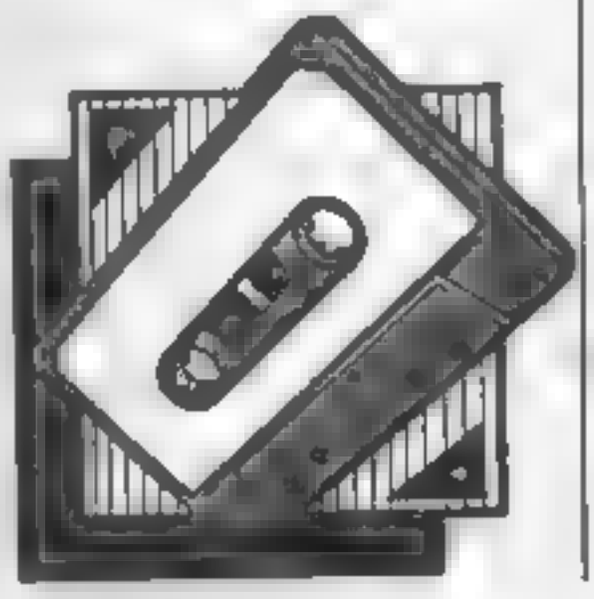
```
10 REM Musical Mousetrap
20 INK 0,0:BORDER 0
30 mousex%=0:mousey%=0:px%=0:py%=0:vx%=0:vy%=0:pvx
%=0:pvy%=0:best=32700
40 GOSUB 490: REM START MUSIC.
50 INK 2,26:INK 3,15:GOSUB 360: REM set up border
60 PLOT 32,16,1:DRAWR 572,0:DRAWR 0,350:DRAWR -572
,0:DRAWR 0,-350
70 DEF FN rndpos(n1%,n2%)=n1%+n2%*RND(1)
80 mousex%=FN rndpos(40,550):mousey%=FN rndpos(20,
300)
90 vx%=4*(1-2*INT(2*RND(1))):vy%=2*(1-2*INT(2*RND(
1)))
100 px%=FN rndpos(40,550):py%=FN rndpos(20,300)
110 score%=0:PEN 1:LOCATE 1,1:PRINT"BEST: "best
120 PLOT px%,py%,3:mink%=TEST(mousex%,mousey%):IF
mink%=0 THEN PLOT mousex%,mousey%,2:GOTO 170
130 REM check for wall collisions
140 i%=vy%:IF TESTR(-vx%,0)<>0 THEN GOSUB 470:vy%=
-vy%
150 IF TESTR(vx%,-i%)<>0 THEN GOSUB 470:vx%=-vx%
160 GOTO 180
170 REM test arrow keys
180 pvx%=0:pvy%=0
190 IF INKEY(0)=0 AND (py%<366) THEN pvy%=2:GOTO 2
30
200 IF INKEY(2)=0 AND (py%>18) THEN pvy%=-2:GOTO 2
30
210 IF INKEY(8)=0 AND (px%>36) THEN pvx%=-4:GOTO 2
30
220 IF INKEY(1)=0 AND (px%<600) THEN pvx%=4
230 REM
240 REM update positions
250 mousex%=mousex%+vx%:mousey%=mousey%+vy%
260 IF INKEY(47)=0 THEN PLOT px%,py%,0 ELSE PLOT p
x%,py%,1
270 REM check for mouse-trapped
280 px%=px%+pvx%:py%=py%+pvy%:IF mousex%/64 OR mou
sey% 326 THEN c%=0
290 c%=c%+1:score%=score%+1
300 IF mink%=0 THEN PLOT mousex%-vx%,mousey%-vy%,0
310 IF c%<30 THEN 120:REM if trapped for 30 passes
, end of game
320 WINDOW#1,2,19,3,24:CLS#1:LOCATE#1,5,13:PRINT#1
,"Press a key ":PRINT#1,TAB(5);"to restart."
330 LOCATE#1,2,3:PRINT#1,"You scored:-"score%:IF
best>score% THEN best=score%:PRINT#1:PRINT#1," Bes
t score today!"
340 IF INKEY$<>"" THEN 340
350 IF INKEY$="" THEN GOSUB 470:GOTO 350 ELSE 50
360 REM set up border
370 MODE 0:CLS:LOCATE 1,2:i4%=0:i1%=1:i2%=20:i3%=2
:GOSUB 430
380 i1%=3:i2%=24:i3%=20:GOSUB 450:i1%=20:i2%=1:i3%
=25:GOSUB 430
390 i1%=24:i2%=3:i3%=1:GOSUB 450
```

Variables

mousex%, mousey% position of mouse
px%,py% player position
vx%,vy% velocity of mouse
pvx%,pvy% player motion
best lowest score so far
score% score for current player
mink% ink colour at mouse position
c% counter for trapped detection
cm%() border colours
cp% pointer to border colour array
mus%() tune array
p1%,p2%,p3% 3-channel tune controls

How it works

10-110 initialise
120 plot player point, and mouse
130-150 check if hit barrier
180-220 set up player motion
250 updates mouse position
260 draws or removes barrier
280 updates player position
290 checks if mouse trapped
300 unplots old mouse position
320-350 end of game
[illegible] set up screen
430-440 do horizontal border
[illegible] do vertical border
470-480 set colours
500-580 set up music
590-650 routines to play three channel music



```
400 cm%(0)=20:cm%(1)=18:cm%(2)=26:cm%(3)=6:cp%=0
410 PEN 1:LOCATE 5,11:PRINT"THE MUSICAL":LOCATE 6,
13:PRINT"MOUSETRAP":FOR i%=1 TO 50:GOSUB 470:FOR c
1%=1 TO 100:NEXT:NEXT:WINDOW#1,2,19,7,24
420 CLS#1:RETURN
430 REM horizontal border
440 FOR i%=i1% TO i2% STEP SGN(i2%-i1%):PEN i4%+12
:LOCATE i%,i3%:PRINT CHR$(143);:i4%=(i4%+1) MOD 4:
NEXT:RETURN
450 REM vertical border
460 FOR i%=i1% TO i2% STEP SGN(i2%-i1%):PEN i4%+12
:LOCATE i3%,i%:PRINT CHR$(143);:i4%=(i4%+1  MOD 4:
NEXT:RETURN
470 REM set colours
480 FOR c1%=12 TO 15:INK c1%,cm%((cp%+c1%-12) MOD
4):NEXT:cp%=(cp%+1) MOD 4:RETURN
490 REM set up music
500 DIM mus%(46,2):RESTORE 510:FOR i%=0 TO 46:READ
 mus%(i%,1),mus%(i%,2):NEXT
510 ENV 1,1,15,1,2, 1,2,13, 1,10:ENV 2,7,5,1,15, 1
,9 ENT -1,4,1,2,4,-1,2
520 DATA 190,50,213,50,239,100,190,50,213,33,213,1
7,239,100
530 DATA 159,50,179,50,190,100,159,50,179,33,179,1
7,190,83
540 DATA 159,17,119,33,119,17,127,17,142,17,127,16
,119,33,159,17,159,33,159,17
550 DATA 119,17,119,16,119,17,127,17,142,17,127,16
,119,33,159,17,159,33,159,9,159,8
560 DATA 119,33,119,17,127,17,142,17,127,16,119,33
,159,17,159,33,179,17
570 DATA 190,50,213,50,239,100
580 p1%=0:p2%=0:p3%=0:SOUND 128+66,100,400,0:SOUND
 128+68,100,800,0:ON SQ(1) GOSUB 590:ON SQ(2) GOSU
B 620:ON SQ(4) GOSUB 640:RETURN
590 REM channel A control
600 SOUND 1,mus%(p1%,1),mus%(p1%,2),0,1:RELEASE 6:
p1%=(p1%+1) MOD 47
```

```
610 ON SQ(1) GOSUB 590:RETURN
620 REM channel B control
630 SOUND 2,mus%(p2%,1),mus%(p2%,2),0,1:p2%=(p2%+1
) MOD 47:ON SQ(2) GOSUB 620:RETURN
640 REM channel C control
650 SOUND 4,mus%(p3%,1),mus%(p3%,2),0,2,1:p3%=(p3%
+1) MOD 47:ON SQ(4) GOSUB 640:RETURN
```

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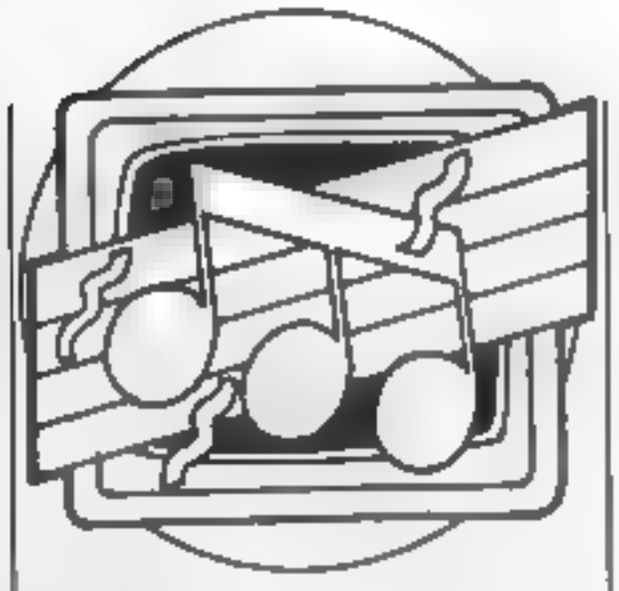
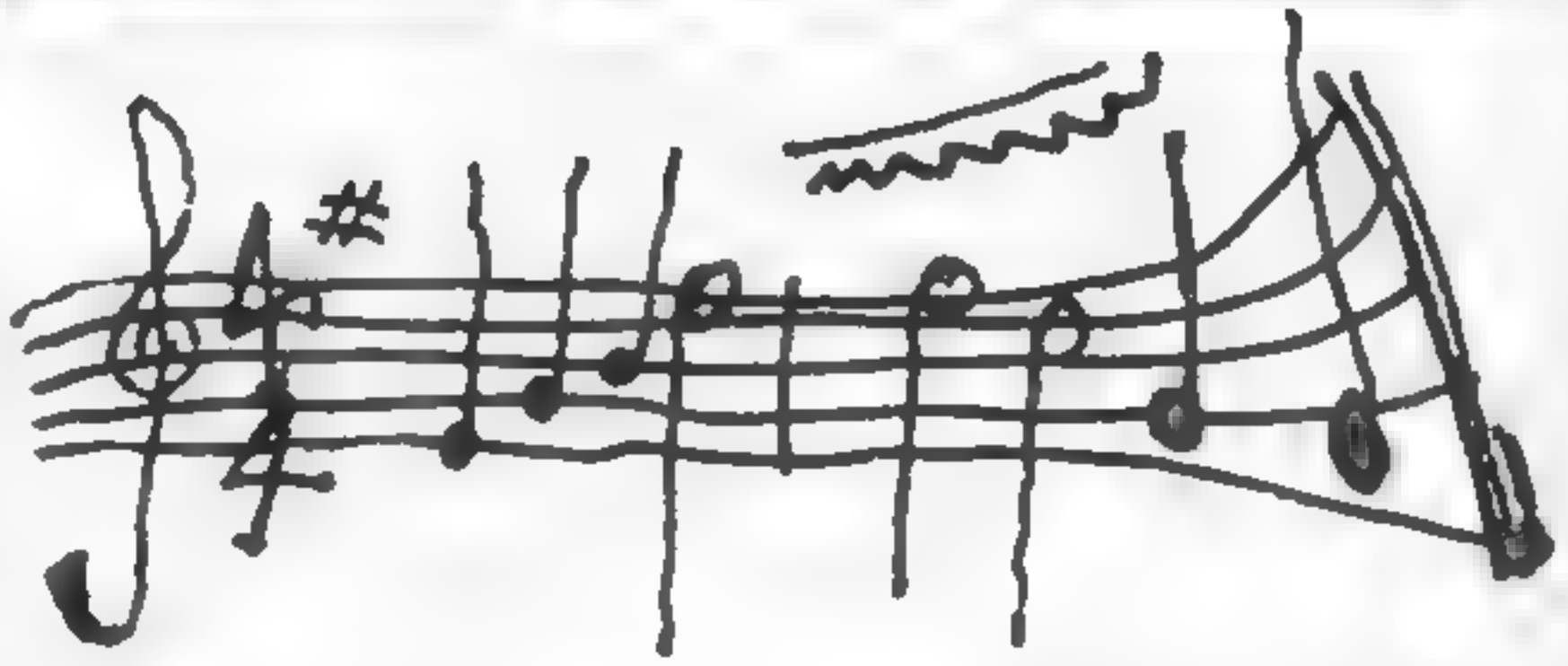
MUSIC AND THE MICRO





This week Clive Gifford looks at Quicksilva's Drum Kit and Acornsoft's Creative Sound. Read on to find out if they set his feet tapping

This week's column is concerned with reviews of two products for the BBC Micro, one from Quicksilva and one from Acornsoft.

Quicksilva's Drum Kit has been available for some while but is worth looking at. It is one of the few percussion packages for any home computer. This is strange when you consider that to turn your computer into a programmable drum machine or rhythm generator is a far more practical idea than to use it as a real time synthesiser. The genuine musician can use such a device to provide a backing track for him or her to play their main instrument or instruments over. The novice can use a simple system as a form of metronome to help them keep time.

Priced at £14.95, it is sparsely packaged by today's standards. The little booklet that comes with the cassette explains the program's features very clearly and concisely. On loading the program, a demonstration rhythm starts which is frankly, rather poor.

The system operates in real time continuously playing the rhythm that is set on the screen. Editing a rhythm is incredibly easy, thanks to using the cursor keys to move to the appropriate part of the setting and then pressing the RETURN key to switch a beat on or off.

There are four actual drum sounds. Snare which is quite realistic as is the Bass drum, Electro which is fair and Sticks which is akin to that infuriating beep that one hears on every sub-£100 Casio synthesiser. There is an option to alter the actual beat voices, but I found it quite difficult to obtain a reasonable alternative sound and was disappointed that the instruction booklet didn't suggest any alternative values. In addition to the four sounds, there is an accent feature allowing you to put extra emphasis on individual beats. I found this to be quite useful.

Apart from the editing procedure already described, the user can play his rhythm in real-time by pressing the corresponding keys and see it entered on the screen grid. This feature is quite difficult to master but could be very rewarding.

There must, of course, be a limit to the overall size of the rhythm, but the Drum Kit allows up to 4000 beats for each voice, certainly more than enough for most purposes. Rhythms can also be saved and loaded from tape

The features seem quite impressive but the complete package does not live up to expectations. It is difficult to pinpoint exactly what was wrong. I would single out the voices as the most disappointing factor. At £14.95, the Drum Kit is overpriced. If it ever comes down to a fiver, then it's worth buying

Creative Sound from Acornsoft is a far better package value-for-money wise. The book sells for £9.95, but Acornsoft have wisely packaged this together with a cassette containing the longer programs from the book. The book itself is a quality introduction into the field of music making on the BBC. Taking you from basics, it leads you right through all the features that you need to know. It has some similarities with Gary Herman's book that I reviewed in the last column; it is not for the total beginner to either programming or the principals of music and sound but it is chock-full of programs.

I loaded the first program from the tape and found myself a little suprised by this opener. It demonstrates Fourier synthesis, which is fine, but, of course, needs a digital/analogue converter board to produce genuine results. The program does nothing more than draw a couple of different graphs and we are told that unless you have a DAC, you will have to sit there and imagine what the waveforms are like!

Feeling a little miffed by this, I started loading and using a number of the other programs. A number of them were simple and several were doubtful inclusions in a serious book on sound construction. Every other program on the first side of the tape seemed to be a waveform generator or a sound effect, many of which were rather poor. Imaginative though I can be, my mind doesn't stretch to beheving that the rantings of the BBC's sound chip when controlled by the envelope given in the book equal a car's engine turning over.

In contrast, some of the programs are of the highest quality. The highlight of all the programs must be the Music Compiler. This program was followed by a number of demonstration tunes of which Adagio was by far the most impressive. If this is what can be done with this program just by entering the various parts using the code format provided, then it justifies much of the cost of the package on its own. Unfortunately, the other demonstration tunes were not as good. Tubercular Bells, the authors' variation on the Mike Oldfield classic, was definitely ill-timed (a terrible pun).

In conclusion the package is well worth purchasing if you have an interest in music-making on the BBC Micro and the extra three pounds for the cassette (the whole package costs £12.95) is worth the time saved in typing in the programs.

C64 PROGRAM

MUSICAL KEYBOARD

Paul Longthorne shows us how to give the C64 a musical keyboard

This program converts the '64s keyboard into a musical keyboard, covering four octaves. Each row of the keyboard covers one octave, as shown in the diagram

KEY					To						
	G	G#	A	A#	B	C	C#	D	D#	E	F	F#
	Q											
	G	G#	A	A#	B	C	C#	D	D#	E	F	F#
	1											
	G	G#	A	A#	B	C	C#	D	D#	E	F	F#
	2											
	G	G#	A	A#	B	C	C#	D	D#	E	F	F#

Trying to achieve this with a BASIC program results in unacceptable delays before the note is heard, so machine code is the obvious answer

How it works

The program is situated in the top 4K of RAM, starting at location 49152

It first loads the key codes, which appear in location 197 when a key is pressed, into 52 bytes of memory, starting at location 49500. These codes correspond to the keys which will be used to play a note. They include the four function keys for future expansion of the program to include synthesising facilities

The low bytes and high bytes of the frequencies for each note are loaded into memory starting at location 49600. Locations 49600 to 49651 contain the low bytes of the notes, and 49652 to 49703 contain the high bytes.

Next, the machine code program is loaded into memory starting at location 49152

Finally, the program sets the volume at full, by placing the number in 15 in location 54296, and allows the user to define the sound envelope for the notes by entering four numbers in the range 0 to 15, which set the attack, delay, sustain, and release values of the envelope

The machine code routine consists of a key press detection loop, which loads the contents of 197 into the accumulator, and then scans through the memory containing the necessary key codes to see if it is present.

If present, control exits from the loop to the part of the program which loads the high and low bytes of the note into the registers of the sound chip and switches the note on. It does this by using indirect indexed addressing to locate the two high bytes in memory.

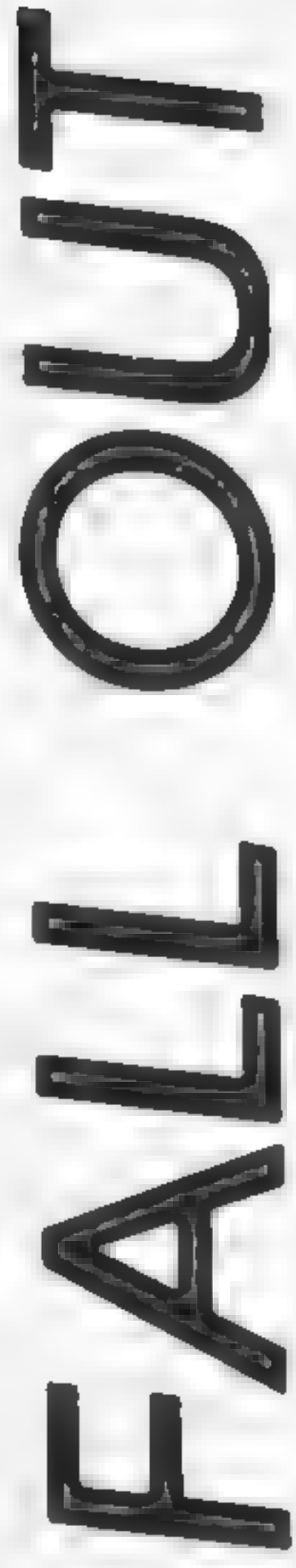
On exit from the key press routine, the Y register contains a number unique to that particular key. This number points to the memory locations which contain the high and low bytes of the note when used in direct indexed addressing.

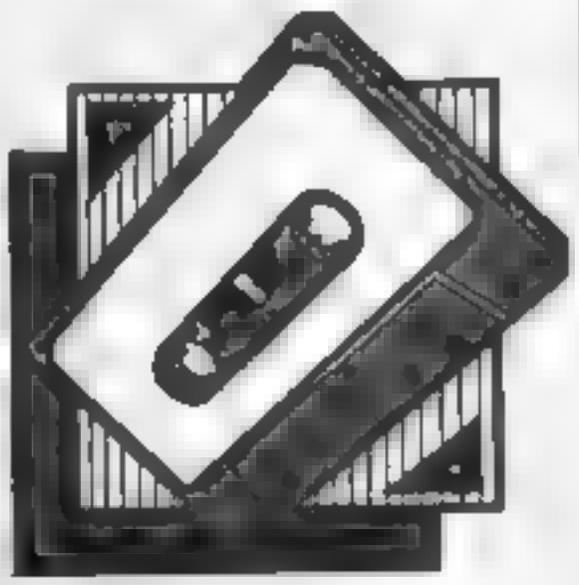
Depressing the F1 key allows the user to construct a new sound envelope. To exit from the program, press the STOP key, and the RESTORE key.

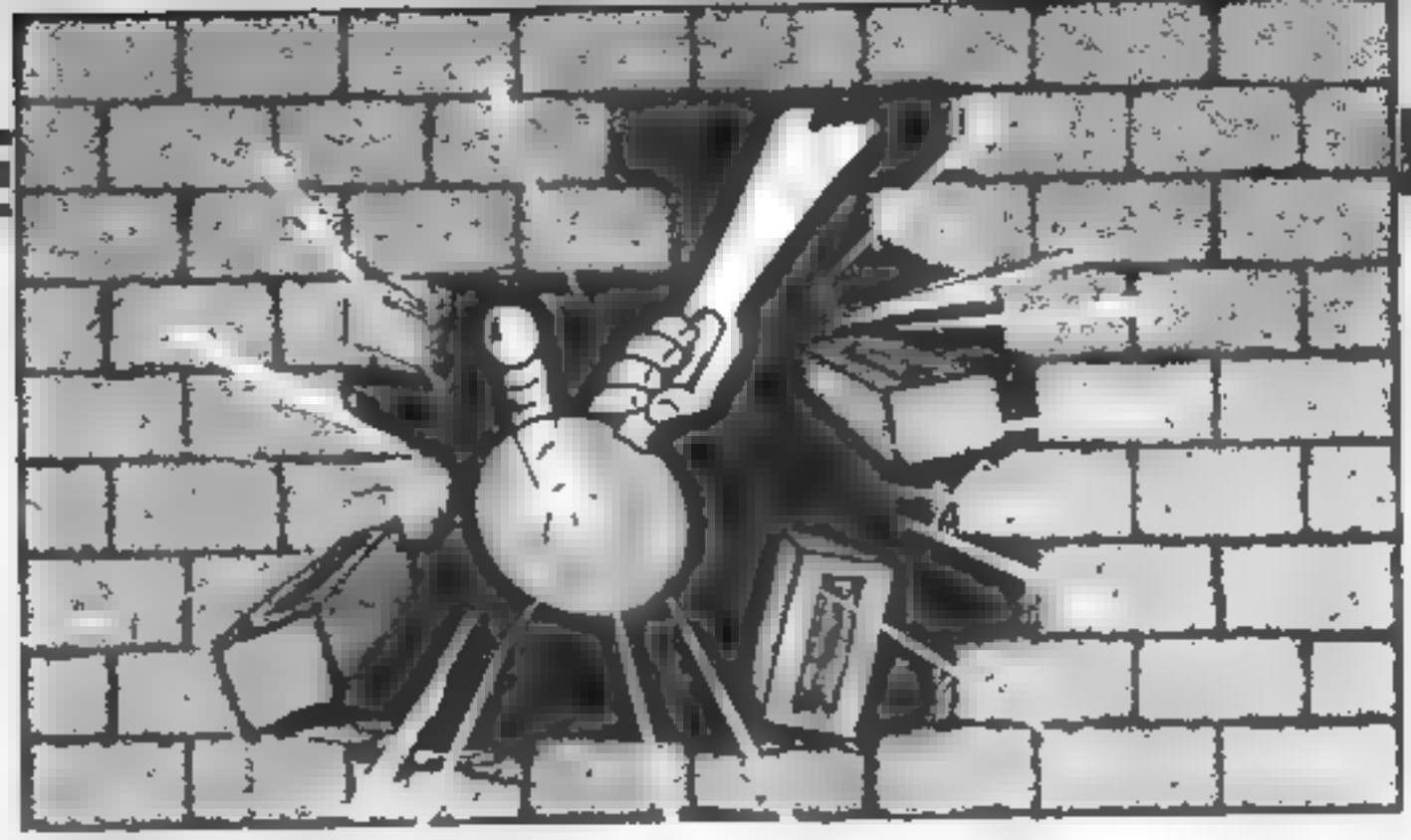
```
10 FORI=49500TO49551:READA:POKEI,A:NEXT
20 DATA2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26
22 DATA27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,49,50
24 DATA53,55,56,59,62
30 FORI=49600TO49703:READA:POKEI,A:NEXT
32 DATA63,0,0,0,0,22,88,1,77,5,216,86,172,120,226,214,43,107,141,168
34 DATA,96,22,189,94,4,47,9,169,79,31,202,85,210,42,126,161,37,25,105,200
36 DATA252,189,52,140,63,254,138,127,154,194,202,94,
38 DATA24,0,0,0,0,26,215,54,205,12,32,247,57,169,61,0,13,,14,30,64,13,145
40 DATA68,32,153,,4,,2,15,14,,,
```

BBC GAME

FALL OUT







Keep your head down as the bricks fall out of Nigel Thomas's wall

You have just 100 seconds on this game to demolish the wall No swinging ball at the end of a long chain for you though, just a bouncing ping-pong ball.

You have only three chances to remove the whole wall and if you run out of time you lose one of those.

If you do manage to clear the wall completely then you have the clock reset.

The bat is moved using the Z and X keys but if you want to understand the point scoring method you will have to check the listing very carefully.

Variables

A% goto title page
B% score
C% lives
D% no of bricks in wall
F% set up screen
G% horizontal position of ball
I% vertical position of ball
J% set up wall
K% bat position
L% high score
N% hold screen
F$ bat graphics
M$ another go?

Hints on conversion

*FX and VDU statements
VDU23,8202;0;0; removes flashing cursor
Other VDU 23's redefine graphics
VDU 19 changes logical colour
*FX15,0 flushes all buffers

How it works

10-70 titles
80-230 reset variables, characters and colours
240 go to title page?
250-260 set variables
270-540 set up screen
550-620 move ball
630-850 check to see if ball has crashed or fallen off bottom of screen and take appropriate action
860-890 input bat movement
900 print scores and lives
910 out of time?
920 return to main loop
930-990 end of game routine
1000-1140 instructions
1150-1180 lost a life routine

```
10REM**************
20REM**Fall*Out****
30REM*****by*******
40REM*Nigel*Thomas*
50REM**************
60AX=0:MODE1
70VDU23;8202;0;0;0;
80VDU23,140,0,0,0,255,0,255,0,255
90VDU23,141,0,0,0,31,16,23,20,21
100VDU23,142,0,0,0,248,8,232,40,168
110VDU23,143,168,168,168,168,168,168,168,168
120VDU23,148,21,21,21,21,21,21,21,21
130VDU23,144,7,31,63,127,127,63,31,7
140VDU23,145,255,255,255,255,255,255,255,255
150VDU23,146,224,248,252,254,254,252,248,224
160VDU23,147,60,126,255,255,255,255,126,60
170VDU23,149,0,127,127,127,127,127,127,0
180VDU23,150,0,254,254,254,254,254,254,0
190VDU23,151,0,127,64,64,64,64,127,0
200VDU23,152,0,254,2,2,2,2,254,0
210VDU19,3,2,0,0,0
220IFAX=0 THEN GOSUB 980
230B%=0:C%=3
240D%=76
250COLOUR2:COLOUR128:CLS
260COLOUR2
270FOREX=1 TO 38
280PRINTTAB(EX,1);CHR$(140);
290NEXT
300PRINTTAB(0,1);CHR$(141);:PRINTTAB(39,1);CHR$(
142);
310FOREX=2 TO 29
320PRINTTAB(0,EX);CHR$(148);:PRINTTAB(39,EX);CHR
$(143);
330NEXT
340F$=CHR$(144)+CHR$(145)+CHR$(146)
350G%=RND(18)+10:H%=27
360FORJX=1 TO 37 STEP 2
370COLOUR1
380PRINTTAB(JX,6);CHR$149+CHR$150;
390PRINTTAB(JX,8);CHR$151+CHR$152;
400
410PRINTTAB(JX,7);CHR$149+CHR$150;
420PRINTTAB(JX,9);CHR$151+CHR$152;
430NEXT
440COLOUR1
450PRINTTAB(0,0);"Score";
460PRINTTAB(25,0);"Lives";
470K%=20
480IFC%=0 THEN 910
490G%=RND(18)+10:H%=27
500I%=RND(2):TIME=0
510
520PRINTTAB(K%,30);F$;
530PRINTTAB(G%,H%);" ";
540IFI%>4 THEN I%=I%-4
550IFI%=1 THEN B%=G%-1:H%=H%-1
560IFI%=2 THEN B%=G%+1:H%=H%-1
570IFI%=3 THEN G%=G%-1:H%=H%+1
580IFI%=4 THEN G%=G%+1:H%=H%+1
590COLOUR2
600PRINTTAB(G%,H%);CHR$(147);
610IFH%=31 THEN PRINTTAB(14,20);"Missed It !";:G
OTO1130
620IFH%=9 AND POINT((G%*32)-24,708)<>0 AND G% MO
D 2=0 THEN I%=I%+2:PRINTTAB(G%-1,H%);" ";:B%=B%+1:
D%=D%-1:GOTO 700
630IFH%=8 AND POINT((G%*32)-24,742)<>0 AND G% MO
D 2=0 THEN I%=I%+2:PRINTTAB(G%-1,H%);" ";:B%=B%+2:
D%=D%-1:GOTO 700
640IFH%=7 AND POINT((G%*32)-24,774)<>0 AND G% MO
D 2=0 THEN I%=I%+2:PRINTTAB(G%-1,H%);" ";:B%=B%+3:
```

PROGRAM

```
DX=DX-1:GOTO 700
  630IFHX=6 AND POINT((GX*32)-24,806)<>0 AND GX MO
D 2=0 THEN IX=IX+2:PRINTTAB(GX-1,HX);" ";:GX=GX+4:
DX=DX-1:GOTO 700
  660IFHX=9 AND POINT((GX*32)+35,708)<>0 AND GX MO
D 2<>0 THEN IX=IX+2:PRINTTAB(GX+1,HX);" ";:GX=GX+1
:DX=DX-1:GOTO 700
  670IFHX=8 AND POINT((GX*32)+35,742)<>0 AND GX MO
D 2<>0 THEN IX=IX+2:PRINTTAB(GX+1,HX);" ";:GX=GX+2
:DX=DX-1:GOTO 700
  680IFHX=7 AND POINT((GX*32)+35,774)<>0 AND GX MO
D 2<>0 THEN IX=IX+2:PRINTTAB(GX+1,HX);" ";:GX=GX+3
:DX=DX-1:GOTO 700
  690IFHX=6 AND POINT((GX*32)+35,806)<>0 AND GX MO
D 2<>0 THEN IX=IX+2:PRINTTAB(GX+1,HX);" ";:GX=GX+4
:DX=DX-1:GOTO 700
  700IFDX=0 THEN 240
  710IFGX=1 AND HX=2 THEN IX=4:GOTO840
  720IFGX=38 AND HX=2 THEN IX=3:GOTO840
  730IFHX=29 THEN 760
  740IFGX=1 THEN IX=IX+1:GOTO840
  750IFGX=38 THEN IX=IX-1:GOTO840
  760IFHX=2 THEN IX=IX+2:GOTO840
  770IFHX=29 AND GX=1 AND GX=KX THEN I=2:GOTO840
  780IFHX=29 AND GX=38 AND GX=KX+2 THEN I=1:GOTO84
0
  790IFHX=29 AND GX=KX THEN IX=IX-2:GOTO840
  800IFHX=29 AND GX=KX+1 THEN IX=IX-2:GOTO840
  810IFHX=29 AND GX=KX+2 THEN IX=IX-2:GOTO 840
  820IFHX=29 AND GX=KX-1 AND IX=4 THEN IX=1
  830IFHX=29 AND GX=KX+3 AND IX=3 THEN IX=2
  850IFINKEY(-98) AND KX>0 THEN KX=KX-1:PRINTTAB(K
X+3,30);" ";:PRINTTAB(KX,30);F$;
  860IFINKEY(-67) AND KX<37 THEN KX=KX+1:PRINTTAB(
KX-1,30);" ";:PRINTTAB(KX,30);F$;
  870*FX15,0
  880PRINTTAB(7,0);BX;:PRINTTAB(32,0);CX;
  890IFTIME>10000 THEN PRINTTAB(14,20);"Out of Tim
e !";:GOTO1130
  900GOTO530
  910MODE7
  920PRINTTAB(11,1);CHR$(141)+CHR$(132)+"FALL OUT
"
  930PRINTTAB(11,2);CHR$(141)+CHR$(134)+"FALL OUT
-
  940PRINTTAB(5,4);CHR$(129)+"You scored ";BX;" po
ints.";
  950IFBX>=LX THEN PRINTTAB(5,5);CHR$(130)+"That's
a high score!";:LX=BX ELSE PRINTTAB(5,5);CHR$(131)
+"The high score is ";LX;" points."
  960PRINTTAB(8,20);CHR$(133)+"ANOTHER GO (Y/N)?";
:INPUTM$
  970IFM$="Y" THEN MODE1:GOTO70 ELSE END
  980COLOUR1
  990PRINTTAB(13,1);"FALL OUT"
 1010PRINTTAB(10,5);CHR$(144)+CHR$(145)+CHR$(146)+
".....your bat";
 1020COLOUR2
 1030PRINTTAB(10,7);CHR$(147)+".....the ball";
 1040PRINTTAB(10,9);">.....move right";
 1050PRINTTAB(10,11);"<.....move left";
 1060COLOUR1:PRINTTAB(10,13);CHR$(149)+CHR$(150)+"
.....1 point";
 1070PRINTTAB(10,17);CHR$(151)+CHR$(152)+".....
3 points";
 1080COLOUR3:PRINTTAB(10,15);CHR$(149)+CHR$(150)+"
.....2 points";
 1090PRINTTAB(10,19);CHR$(151)+CHR$(152)+"..... .
4 points";
 1100AX=1:CX=0
 1110FORNX=1 TO 5000:NEXTNX
 1120RETURN
 1130FORNX=1 TO 30:SOUND1,-15,0,1:NEXT
 1140CX=CX-1:PRINTTAB(GX,HX);" ";
 1150PRINTTAB(14,20);"                ";
 1160GOTO480
```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WATFORD ROMS

Jon Revis has been trying out two new products from Watford Electronics — and he loved them!

Watford Electronics has recently released two ROMs which are aimed at making life easier for the dot matrix printer user

Over the years I have found that word processing can become just as addictive as space invaders. Once you have got the word processor bug you will probably find that every item of correspondence that leaves your home has to be printed. Unfortunately even the quality of print produced by an Epson printer is not adequate for some of the more official letters. This problem can be overcome in two ways, you can pay out over £500 for a daisy wheel letter quality printer or you can purchase the Epson Near Letter Quality ROM from Watford Electronics.

The NLQ ROM allows any Epson FX or RX printer to do a pretty good impersonation of its more expensive cousin, the daisy wheel. A word of warning to any user of an Epson compatible printer, check with Watford that the NLQ ROM will work with your particular printer before actually buying the ROM as it doesn't work with all so called "compatibles".

Using the ROM is a two stage process, firstly the ROM must be initialised, this is done using the *NLQnn command where nn is the model number of the printer eg. 80 when using an RX or FX80 or 100 when using an FX100. By following the command with a two digit hexadecimal number the user is able to select which area of RAM the ROM is to use as workspace e g. * NLQ80 OB will select RAM which is normally reserved for the function keys. Should no address be specified then the cassette buffer is used as the default workspace.

Having initialised the ROM it can then be accessed, directly via the command *NLQTYPE, from BASIC using VDU1,129, or from Wordwise via the embedded command OC129. View users will need to purchase a separate printer driver for a further £7 50

The ROM allows the use of a selected few of the normal printer facilities, these consist of Enlarged text, Underlined text, and Proportional text.

The quality of the printed text is excellent, even under close scrutiny the individual dots are not visible. The NLQ ROM provides an inexpensive way of obtaining a high quality printout.

The second offering in this printer duo is called Dump Out 3 and is a machine code screen dump utility ROM. Dump Out 3 enables the user to produce both graphic and text screen dumps in any of the BBC's nine screen modes (yes even mode eight!). These dumps can be performed on over 19 different models of dot matrix printer

The command which initiates the graphics screen dump is *GIMAGE, this command can be used with varying degrees of complexity, the simplest form consists of *GIMAGE Xprinter typeX where the printer type is specified by a three letter code. By following the command with any or all of the 14 optional parameters then the user is able to produce either two-tone or multi-tone dumps, rotate the dump through 0,90,180, or 270 degrees, reduce or enlarge the dump, plus numerous other options. With other similar ROMs which also allow multiple parameters to be used, the parameters must all be entered in a specific order. If the only option required just happens to be the seventh option then values must also be entered for the first six. Dump Out 3 prefixes each paramter value with a single letter thus allowing individual parameters to be entered irrespective of their position in the command's syntax

*GWINDOW displays a flashing box on the screen which represents the graphics window, the sides of the box can be moved in any direction via the cursor keys. Having created a graphics window of the correct size and screen position, pressing the "P" key displays the co-ordinates which would be required by the VDU24 statement in order to produce the same window in one of your own programs, this facility makes light work of an otherwise laborious task. The *GWINDOW command can also be used in conjunction with the *GIMAGE command, when used in this way the user can selectively print one specific area of the screen.

Should the user be only interested in the text present on a screen the command *TIMAGE can be used, this rapidly sends all text to the printer displaying any graphics present as asterisks. *TWINDOW works in the same way as *GWINDOW but specifies a text window.

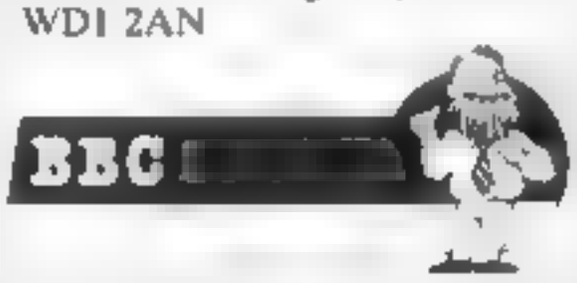
Dump Out 3 comes complete with an excellent manual which fully explains every command and its associated parameters. The ROM provides a rapid means of producing high quality screen dumps from your own programs with the minimum of fuss.

With these two ROMs installed in your machine you have the facilities at your fingertips to fully utilise that often underused peripheral, the printer. **J.R.**

Price: Near Letter Quality Rom: £25 30
Dump Out 3 Rom: £27.60

Manufacturer: Watford Electronics

Address: 250 High St, Watford WD1 2AN



SOFT SWOT

If you travel to the continent or just like eating in French restaurants then Margaret Webb has some good advice for you and your micro

French Language Learning Programs

Parlez — vous francais? If not maybe this is the time to think about learning the language. Then again if like me you have some knowledge — i.e. school French — but have grown a little rusty — it could be an ideal time for a refresher course. There are several programs available for the Commodore 64 and Spectrum computers which could prove useful to both the serious user or the traveller who only wants enough to help him through reading a timetable or the labels in a supermarket.

When searching for the ideal program you must look at certain criteria. For instance if you have a good grounding but want to test your knowledge you may want to look at one of the programs with a games format. Chalksoft's Eiffel Tower tests vocabulary by asking the user to translate words, a correct answer is rewarded with a stage of Eiffel Tower being built. Sulis's 'Just a Mot' has two different games; one a Space Invaders type game where you shoot down the wrong translation and another where you match a word in the first column with its translation in the second. Both these programs have their uses but neither really teaches the user anything

The opposite approach is to teach and test in a very dry way; that is to say, teach a batch of vocabulary or a verb by putting the words on the screen without any frills — just the basic translation — and then test the user on what has been learnt. Sulis's Tense French and Kosmos's French Mistress use this approach. The former deals only with French verbs and does not explain adequately what the different tenses are nor when or where they would be used. The latter deals — on two separate cassettes — with a wide range of vocabulary and other parts of grammar e g. verbs, adverbs, conjunctions and prepositions Neither of these programs need any prior knowledge and so would be of use to either of our original groups. However they could prove to be very boring and in the long run counter productive.

It would seem logical therefore to look for something which is fun, without losing the point of the program, but which still has enough educational content to make it useful without it sending the user to sleep. Dr Michael Gruneberg seems to have met and mastered this problem with his Linkword approach to language learning.

Protek were marketing the Gruneberg Intermediate Linkword Language Course. It is aimed at the user with a basic knowledge of French. It is a comprehensive course consisting of thirty three sections each dealing with a specific or revision topic plus a chunk of vocabulary. It is designed so that, after about fifty hours use, you will have gained an extensive vocabulary and all the major grammar points necessary to master the language. All of this is done without falling into the inevitable trap of total boredom.

Dr. Gruneberg is Senior Lecturer in Psychology at University College Swansea and he has used his expertise to design this course. Every time a new word or concept is to be learnt the reader is asked to visualise the word in an unusual way. For example when learning the French for cat — chat — you are asked to visualise a cat sitting on the knee of the late Shah of Iran; thus giving a mind jogger for both the word and it's pronounciation.

When learning genders — important in all foreign languages — feminine words are memorised by using the image of perfume and masculine by the use of boxers and a boxing ring. Thus it is easy to remember that a French goat is feminine because it uses perfume to disguise the smell and that a French dog is a boxer sitting on a boxer's knee. Learning gender was always a weak spot with me but I found this association exercise very useful.

When it comes to learning verbs a similar approach is used with equally good results. The package is available for the Sinclair Spectrum but Audiogenic has a similar package available for the Commodore 64 which does not pre-suppose any prior knowledge. This must be the best method I have come across for language learning, it is fun and informative.

EDUCATION

If when you have learnt the language you want to learn a little more of the country and its people you may care to look at Longman's French 'O' Level revision. In addition to the basic language text there is a detailed section covering the regions, towns, and produce of France.

Finally, remember that there are limitations to learning a language by computer. None of the programs I have seen have had an audio-tape so that learning to speak the language is difficult. However this is a minor point which can be rectified by your going abroad and trying out your new skills! Bonne Chance.

Program: French Mistress Tapes A & B

Publisher: Kosmos Software, 1 Pilgrims Close, Harlington, Dunstable, Beds

Machine: C64, Spectrum

Price: £8.95

Program: The Gruneberg Linkword Language Course

Publisher: Audiogenic

Machine: C64

Price: £12 95

Program: The Gruneberg Intermediate Linkword Language Course

Publisher: Protek Computing, 1a Young Sq, Brucefield Ind Pk, Livingstone

Machine: 48K Spectrum

Program: Just A Mot and Tense French

Publisher: Sulis Software, distributed by John Wiley & Sons, Baffins Lane, Chichester

Machine: C64 & Spectrum

Program	Some knowledge required	Vocabu-	Verbs	Teaching Program	Test	Games Format	English
Kosmos French Mistress A	No	Yes	No	Yes	Yes	No	Yes
Kosmos French Mistress B	No	Yes	Yes	Yes	Yes	No	Yes
Audiogenic Linkword	No	Yes	Yes	Yes	Yes	No	Yes
Protek Linkword	Yes	Yes	Yes	Yes	Yes	No	Yes
Sulis Just a mot	Yes	Yes	No	No	Yes	Yes	Yes
Sulis Tense French	Yes	No	Yes	Yes	Yes	No	Yes
Chalksoft Eiffel Tower	Yes	Yes	No	No	Yes	Yes	No
French O Level	Yes	Yes	Yes	Yes	Yes	No	No

Program: Eiffel Tower

Publisher: Chalksoft, 37 Willowslea Rd, Worcester

Machine: C64, Spectrum

Price: £7.95

Program: French

Publisher: Longmans Software, Longman Group, Fourth Ave, Harlow

Machine: C64, Spectrum

Price: £7.95

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REVIEW

Brian Jones has given Trigsoft's GT Loader the once over on his C64 and here's his verdict

Talk to anyone who has, after months or years of using the tape drive, just got a disc drive and they will overwhelm you with the joys and advantages of their latest acquisition. Talk to them again a few months later and, whilst they still enthuse over the advantages, they will no doubt have started to feel the limitations of the speed of the 1541 disc drive

Loading from disc can take as long as the fast tape loaders. While BBC and Electron users can stuff their machines full of program in less time than it takes to nip off and grab a can of something cool from the fridge, the poor 1541 owner has time to boil the kettle and brew fresh coffee.

As with many of the areas where Commodore has, perhaps for very good reasons, left its customers wanting to improve the basic package, there is a thriving industry of add-ons and software to fill the gap. You can now buy replacement chips, speed-loader programs and cartridges to improve the performance of what must be the slowest disc drive on the market. The trouble is that none of them I've heard of, work with all software. So is something that only works some of the time worth having?

Having used the Trigsoft GT Loader Cartridge I have come to the conclusion that the answer is yes. Trigsoft has done its best to maximise the benefits, and perhaps more important, to remove any disadvantages. To this end they have fitted an on/off switch so that for programs that use HIRAM, you switch it off as soon as the program has loaded. It also means that you don't have to keep removing and replacing the cartridge before and after using a program with which it doesn't work at all and may even stop it loading properly — like Easyscript, which I'm using to type this.

Of course, you have to understand that what you might consider to be loading time for a program isn't necessarily all taken up with transfer of program to computer. Many programs, both tape and disc, load in two or more parts. Once the first part is loaded it runs then loads in the next part. During that first run it may spend a number of seconds setting up things such as sprites before it continues with the load. So, when Trigsoft claims "approximately four times faster" for load times, that may not show on your stop-watch. But even with a one block program I couldn't clock over a three fold increase in speed. That's still a good enough improvement for which to be grateful. The big letdown comes with programs that don't use the load routine ROM. When that happens the load speed reverts to the old slow 1541 standard. Unfortunately this is the case for quite a bit of commercial software, particularly the latest releases

Multiplan, the Spreadsheet I use — and would use more were it not for its dreadfully slow disc accessing — loaded the first two sections at speed then went back to normal for the third part. The result was to knock just 20 seconds off the normal one minute 50 second loading time. A 154 block game on the other hand was reduced from 102 seconds to 41 seconds, while a five part game of 1,9,9,9 and 70 blocks was almost halved from the usual 66 seconds down to 36. Some games load different screens from disc during the game; with Space Taxi the GT load worked but not with Jumpman. The advantage you get depends on the sort of programs that you load most often. Anyone using lots of own written programs will save a lot more time than someone using commercial business applications packages.

There is another bonus to the cartridge. It makes the normal load and save commands disc-orientated. So SHIFTED RUN/STOP loads the first program from disc, as in BASIC 4. LOAD"PROG fast loads the program called PROG from disc, while SAVE"PROG saves PROG to disc, but at normal speed. Also useful is LOAD"$ which displays the directory without erasing the program in memory.

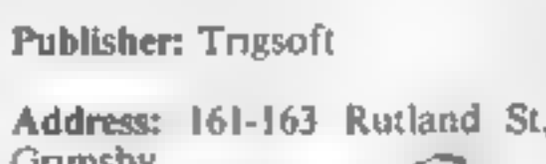
The cartridge comes with clear instructions including how to fit a lead to one of the resistors on the circuit board. This is so that programs that use the RAM under the Kernal ROM will function properly Even the most electronically ignorant could follow their directions, complete with diagrams.

This isn't the ultimate speed-up package for the 1541. But if you value your time highly or just can't stand the length of time that the red light glows on the drive, it's well worth considering.

Price: £20

Publisher: Trigsoft

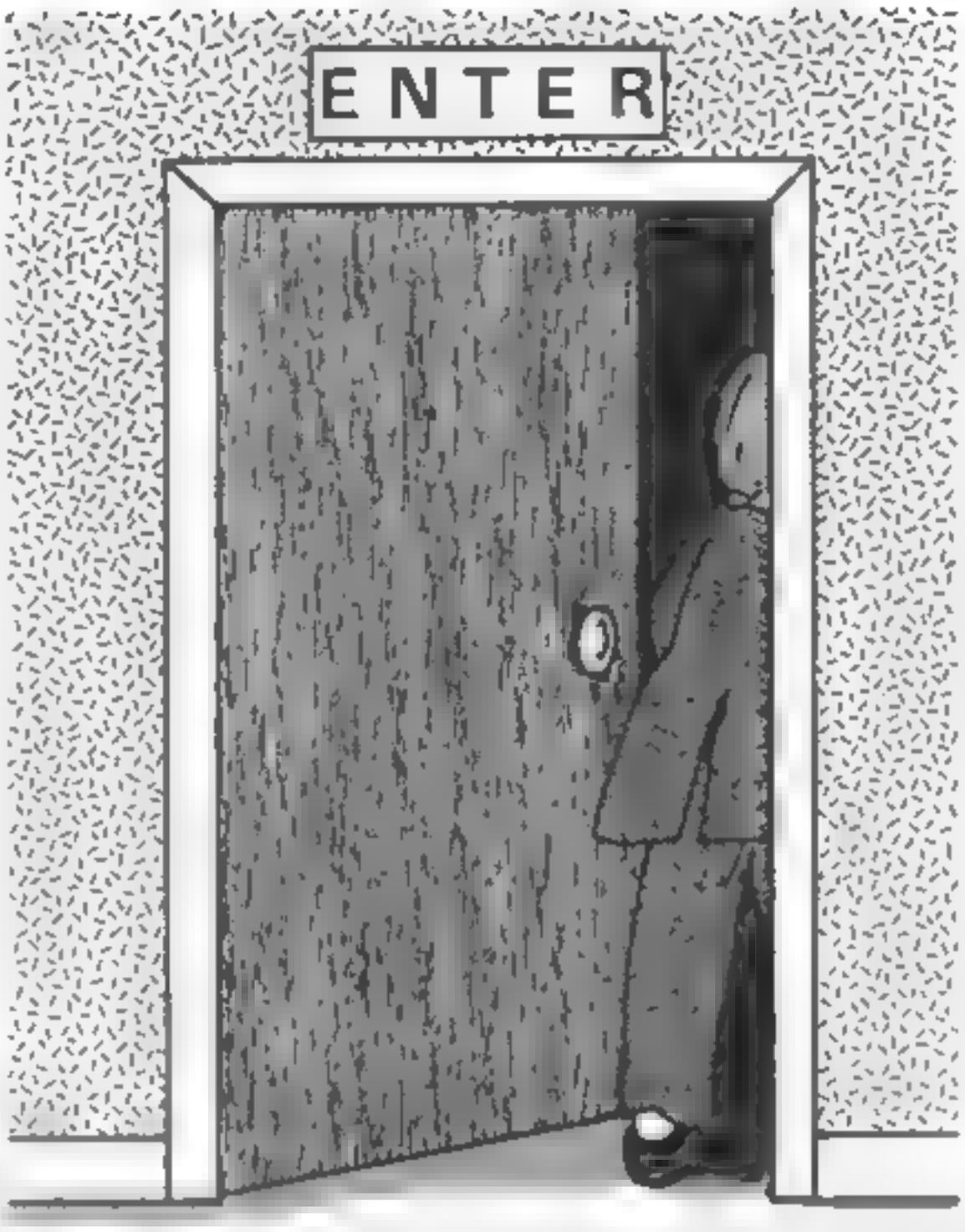
Address: 161-163 Rutland St, Grimsby



CONVERSION

INS AND OUTS

In our sixth and final article on BASIC conversion, Peter Green looks at the flow of data to and from your computer



There are only two situations to consider: sending text to a printer, and saving or loading programs or data on tape or disc. Any other kind of I/O in a BASIC program is probably too machine-specific to be convertable.

Into Print

Two main systems here: first, specific commands in the BASIC, LLIST and LPRINT, which respectively list the program to the printer and send strings and variables to the printer instead of the screen. The Oric works this way: so does the Spectrum, but it also offers COPY. This sends a copy of the screen display to the printer, but as no other computer has a built-in screen dump facility you can't convert it.

The other system, found on the Amstrad, BBC and Commodore 64, uses "channels", "streams" or files (on the 64). What happens to a particular piece of data depends on which channel it was sent to.

On the Amstrad, for example, PRINTing to streams #0 to #7 makes the data appear on screen in text windows 0 to 7. But PRINT #8 sends it to the printer. Use LIST #8 or LIST 1000—2000, #8 to list all or some of your BASIC program on the printer.

The BBC is even simpler. After using VDU2, everything that goes to the screen also goes to the printer stream (the display keeps pausing to let the printer catch up). The printer is turned off using VDU 3. VDU means PRINT CHR$(). Associated commands are *FX5 plus a number to specify a serial or parallel printer, and *FX8 to choose a serial baud rate. Output can be sent to the printer only, and not the screen, by using *FX3, but most people don't seem to bother

The Commodore 64 uses a system of file numbers and device numbers to identify its streams. The full details are complicated, but to simplify, suppose your source program has this:

```
OPEN 3,4:PRINT # 3,
  "PRINTED TEXT"
```

This "opens" a file called 3 on device 4, which is usually the printer. Then printing something to file 3 causes it to appear on the printer, not the screen. This works until file number 3 is closed, using CLOSE # 3. Now PRINT # 3 gives an error. File numbers are just labels and can range from 1 to 255.

cmd3 is used to redirect anything normally sent to the screen to file 3 instead. This is how you get listings, for example.

You may find odd CHR$()s in text sent to a Commodore printer. These are necessary to switch things like upper and lower case. Other BASICs are happy with straight ASCII.

Chain Stores

Sometimes (or often, on the minute memory of the Beeb) it is necessary to load a program in several sections, each part loading and running the next. On the BBC the CHAIN command is used to do this: all normal variables are lost, but up to 26 integer values can be passed from one program to the next in the "resident integer variables" A%-Z%.

Another popular technique is to save and load blocks of binary data, usually new character sets or screen displays. The BBC command for a binary LOAD is *LOAD "dataname".

The Commodore 64 only needs LOAD "progname" in a program to load and auto-run a second one. All variables are retained, but you might see some mucking about with memory locations 45-50 in C64 source programs that use this technique. Ignore it: it's to stop long programs overwriting the variables of earlier, shorter ones

The Spectrum uses LOAD "progname", which auto-runs from a line number specified by the original SAVE command. Also, variables are saved on to tape along with the program, and these values replace any existing ones after the LOAD

Binary data is loaded using the form LOAD "dataname" CODE, and there's a special version to simplify the saving and loading of screen displays: LOAD "name" SCREEN$

The Oric is similar in some ways to the Spectrum, though here you use the command CLOAD "progname". The new program will only auto-run if it was originally CSAVEd using an AUTO specification. And you need to tell the computer whether it was saved at a fast or slow speed (using CLOAD "progname",S), or it won't load the program. For binary data you even have to tell it the start and end addresses, thus:

```
CLOAD"data",A48000,
E49119
```

(that's for a TEXT or LORES screen display, incidentally).

The Amstrad is much more

intelligent. You use LOAD "name" for everything: programs in tokenised or ASCII format, protected or unprotected, or binary data, at any speed you like. The computer works out the speed and data type from the header, and acts accordingly. To auto-run a BASIC program you use CHAIN "progname" to keep the variables, or RUN "progname" to wipe them

Variables for posterity

One final use for the cassette recorder is in things like database, or filing, programs. Here you need to store your records of names and addresses or whatever, on to tape before turning off the computer. Which means, of course, saving BASIC variables and loading them back next time.

As we've already seen, ordinary variables on the Spectrum can only be saved and loaded together with the rest of the BASIC program. However, there are commands that let you store numeric and string arrays separately. These are:

SAVE (or LOAD) "filename" DATA arrayname()

The whole contents of the array are now stored on tape.

The BBC, Amstrad and Commodore 64 all use variations on the same basic idea. A file is opened and assigned a number as a shorthand label Then variations of the PRINT and INPUT statements can be used to place data on, or read it off, the tape. Any BASIC variables can be written out in this way. The Beeb and the 64 also let you read data back in as single bytes, but this facility is not available on the CPC464 the Beeb commands are BPUT# and BGET#, while on the C64 it is GET#: in each case the file number goes after the #.

Listing 1 gives equivalent versions of filing for each of the three machines, to save and load different types of variables. Note that the CPC464 must send data to stream #9, which is the cassette stream. All three machines can detect the end-of-file: the BBC uses EOF#, the CPC464 uses EOF, and the Commodore has to test if bit 6 of the system variable ST is set

The Oric is the easiest of all to deal with: it doesn't have any commands at all for saving or loading BASIC variables!

The last word

That's the end of the series. It's covered the most basic BASIC, though there are still a lot of quirks for you to find and experiment with. Just remember the golden rules: break up the source program into manageable chunks, decide what each bit does, and do the same thing in your target BASIC. Good luck!

Listing 1
File operations in
(a) Commodore BASIC,
(b) BBC BASIC and
(c) Amstrad's Locomotive BASIC

Listing 1a

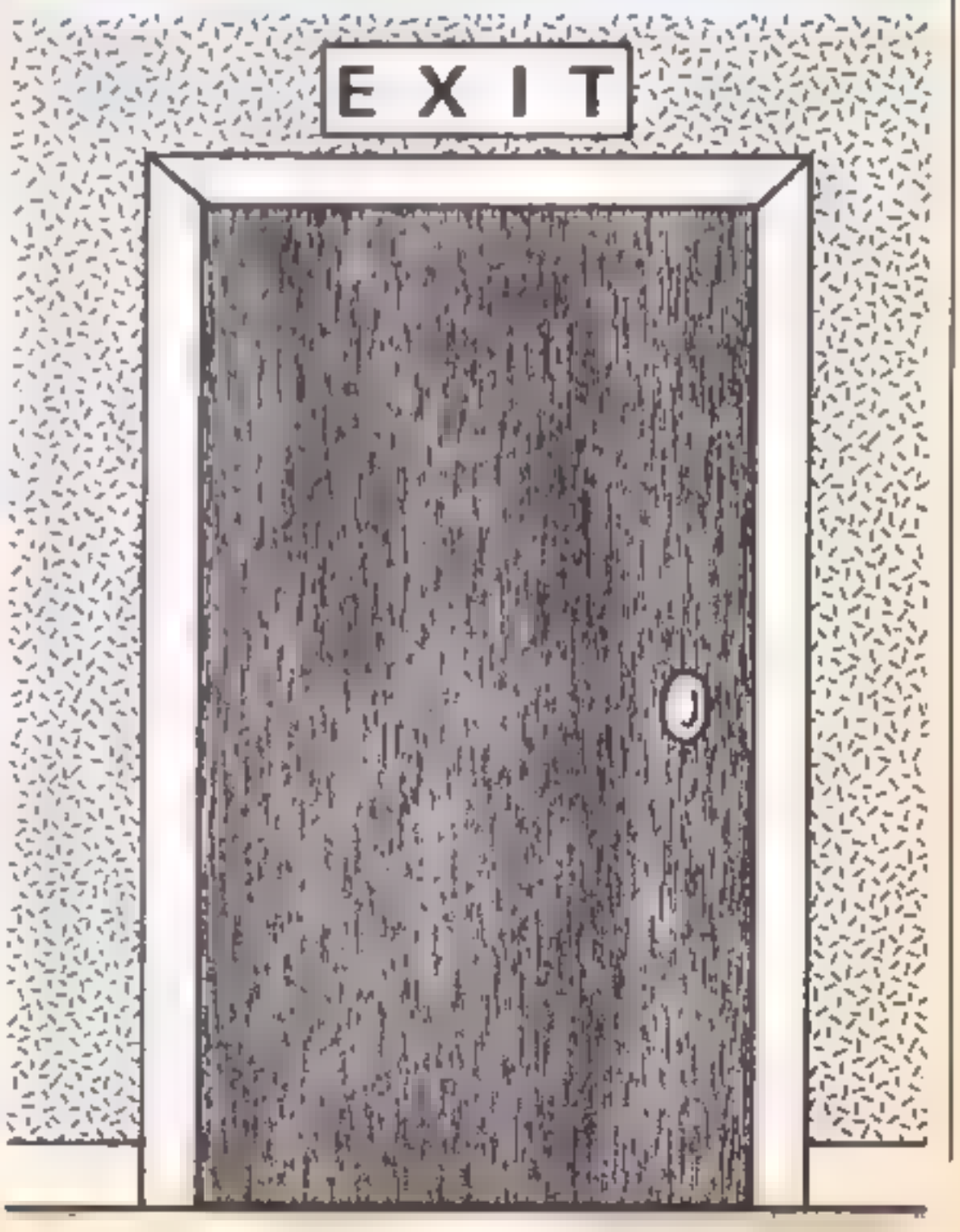
```
100 'Commodore writing
110 OPEN 3,1,1,"EXAMPLE" :REM ** FILE REFERENCE
    NUMBER IS 3, FILE NAME (ON TAPE) IS "EXAMPLE"
120 PRINT#3,A$
130 FOR I=0 TO 5
140 FOR J=0 TO 20
150 PRINT#3,B(I,J)
160 NEXT J: NEXT I
170 PRINT#3,V1;CHR$(13);D$;CHR$(13);Y;CHR$(13)
180 CLOSE 3
190 '
200 'and reading
210 OPEN 5,1,0,"EXAMPLE" :REM ** OK TO USE A
    DIFFERENT FILE NUMBER HERE
220 INPUT#5,A$
230 FOR I=0 TO 5
240 FOR J=0 TO 20
250 INPUT#5,B(I,J)
260 NEXT J: NEXT I
270 INPUT#5,V1,D$,Y
280 CLOSE 3
```

Listing 1b

```
100 'BBC writing
110 X=OPENOUT "EXAMPLE" :REM ** X is the channel
    number which is assigned by the Beeb, not you
120 PRINT#X,A$
130 FOR I=0 TO 5
140 FOR J=0 TO 20
150 PRINT#X,B(I,J)
160 NEXT J: NEXT I
170 PRINT#X,V1,D$,Y
180 CLOSE#X
190
200 'and reading
210 F=OPENIN "EXAMPLE" :REM ** Doesn't matter what
    numeric variable you use for the channel no.
220 INPUT#F,A$
230 FOR I=0 TO 5
240 FOR J=0 TO 20
250 INPUT#F,B(I,J)
260 NEXT J: NEXT I
270 INPUT#F,V1,D$,Y
280 CLOSE#F
```

Listing 1c

```
100 'Amstrad CPC464 writing
110 OPENOUT "EXAMPLE" :REM ** The stream number is
    always 9 for read/write to cassette
120 PRINT#9,A$
130 FOR I=0 TO 5
140 FOR J=0 TO 20
150 PRINT#9,B(I,J)
160 NEXT J: NEXT I
170 PRINT#9,V1,D$,Y
180 CLOSEOUT
190 '
200 'and reading
210 OPENIN "EXAMPLE" :REM ** Stream 9 again
220 INPUT#9,A$
230 FOR I=0 TO 5
240 FOR J=0 TO 20
250 INPUT#9,B(I,J)
260 NEXT J: NEXT I
270 INPUT#9,V1,D$,Y
280 CLOSEIN
```



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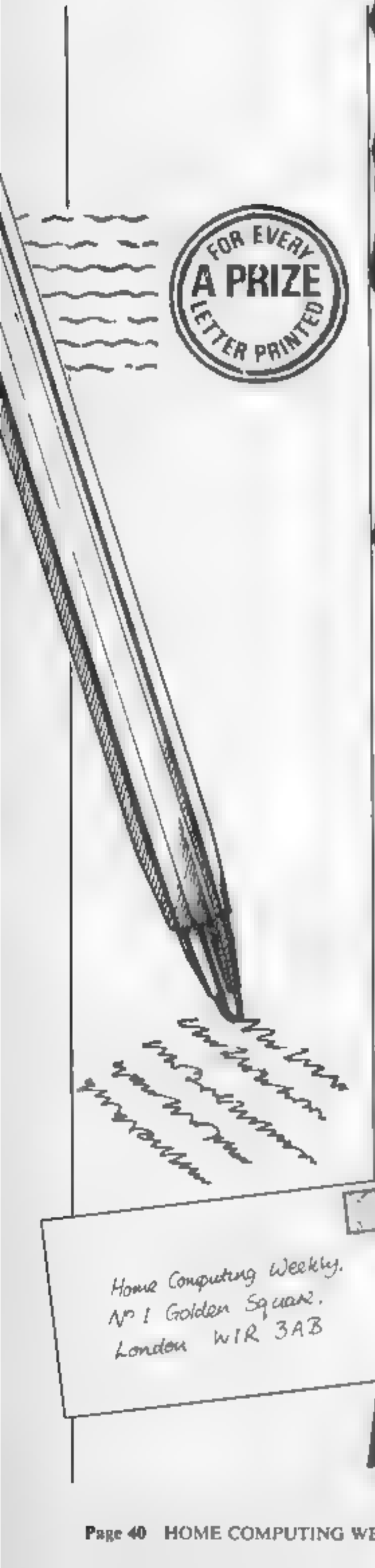

Nothing ventured

After having your magazine for two weeks I was amazed to find there was no adventure section. No decent computer magazine is complete without a help page or hints and tips so I propose we start one.

Any other point how about a game finding for the Commodore 64 as I'm sure there are one or two people like me who have recently bought a C64 and I'm sure they would appreciate it. Or for the Spectrum as you know how to use the BASIC how about a listing or two. I enjoyed your article Welcome to BASIC and would like a new column. Better Part the Spectrum and add ons and add ons even. Welcome to BASIC. And I'm sure you'll agree with me Better Spectrum listings please.

Kieran Ryan, Newcastle West

We're very sorry that you have found so many faults with the magazine, Kieran, especially since you are a new reader. However, if you continue to buy HCW you will find that many of your criticisms are unfounded. We run Adventure column as often as possible and would be pleased to hear any comments from readers in this area. We also run a list of C64 games and have several articles lined up for the near future. More people are using programming tips although we know that most understand BASIC can get tedious after a while. However we are now starting an machine code section and hope to have one out for this in the near future.

Lost dots

I have purchased HCW every week since it entered circulation and find it superb value for money. I have many comments to make and in particular I like the RSX section from [illegible] Amstrad Home Computing Weekly [illegible] overall opinion free but I am writing to you with reference to the Gallup software chart in HCW 116. It seems that every time you publish this [illegible] several games in the Amstrad column. Football Manager is available on the Amstrad as is Knightlore and World Series Baseball. I suppose you could adjust the charts accordingly ready for [illegible] appearance.

Clive France, Redhill

The chart is published exactly as we receive it from Gallup and we cannot change it in any way. We apologise if there are occasional omissions in certain columns but unfortunately there is nothing we can do about this.

Drive in

Users of the excellent Byte Drive disc operating system, for the Oric/Atmos computers, may be interested to note that I have developed a method of converting version 2 software to the version 3 format. Some existing users are afraid of upgrading their system because they do not wish to lose their original software.

I also think that the old version 2 interface cables can be converted to version 3, thus avoiding the expense of purchasing a new cable and scrapping the old. Unfortunately I am unable to prove this theory yet as my existing version cable is a prototype, and therefore not identical to those supplied by ITL and Tyrel.

Anyone who is interested in the conversion, or in forming a Byte Drive User Group should contact me on 0942 728161 or send me an s.a.e.

Gareth Williams, 1 Dunblane Close, Garswood, Ashton-in-Makerfield, Wigan WN4 0SH

In a jam

I refer to your two recent reviews of Jaman for the Amstrad CPC464, one of which was released by Tasket and the other by Amsoft. Both of these reviews gave a very loose rating. I recently got a conversion of this original game for the Commodore 64 which you gave a five star rating as well.

I would be grateful if you would point this out to your readers as I had a challenge to draw attention with this conversion and I dislike intensely [illegible] The conversion has not been properly played and totally lacks the feel and style of the original. We have been trying to Tasket to better with the conversion and to [illegible] or we can only assume [illegible] Amstrad owner.

Tony Gibson, Gibbo Productions

We would like to point out that Tony's letter contains a warning for all programmers and potential programmers. If you create a game and then sell that game to a company it doesn't matter how much you protect your creation, you need to read the contract very carefully.

Although we cannot comment on this specific case it is quite standard for a programmer to sign away all the rights to a program in exchange for a payment of some kind. In such a case the program, name and idea then belong to the company concerned and the programmer has no further say in what happens to the game or idea. In most cases this doesn't cause any problems but there are occasions like this one where it can.

We would advise all programmers to have any contracts that they are offered checked very carefully and if they are not happy with the contracts they should have the contracts amended before signing. We would further advise that you should never send a program or idea without a contract at all. Your bank or other professional adviser should be consulted before you sign anything of this nature.

Top 20

Compiled by Gallup

SOFTWARE

Fortnight Ending June 25, 1985

Up and coming

What a static chart! We thought that things were quiet last time but this one shows so little change it's almost unbelievable.

It could be that the holiday season is starting and only the well-known games are selling but a quick scan of the top 50 suggests that there are hardly any of the newer releases making the chart at all.

Booty is still selling and comes in at number 29 this week, over eight months after its release. Budget software is obviously selling, there are nine games from Firebird and Mastertronic in the bottom 30 of the chart.

Dun Darach, the follow up to Tir nir Nog, is also moving through the ranks and has joined the main chart at number 42.

Keep on buying Soft Aid, a quarter of a million is a good total but if you could make it half a million pounds it would help many more people!

LAST WEEK	MOVE	THIS WEEK	TITLE	PUBLISHER	SPECTRUM	COMMODORE	BBC	ELECTRON	VIC 20	AMSTRAD	ATARI	OTHERS
1	●	1	Soft Aid	Various	●	●						
2	●	2	Spy Hunter	US Gold	●	●						
3	●	3	Shadowfire	Beyond	●	●						
4	●	4	World Series Baseball	Imagine	●	●						
5	●	5	Knightlore	Ultimate	●		●				●	
6	●	6	Combat Lynx	Durell	●	●	●	●			●	
7	●	7	Alien 8	Ultimate	●		●				●	
9	▲	8	Bruce Lee	US Gold	●	●						●
12	▲	9	Everyone's a Wally	Mikro Gen	●	■						
8	▼	10	Dambusters	US Gold		●						
15	▲	11	Rocky Horror Show	CRL	●	●					●	
10	▼	12	Daley Thompson's Decathlon	Ocean	●	●					●	
14	▲	13	Starion	Melbourne Hse	●							
11	▼	14	Gremlins	Adventure Int	●	●	●	●				●
13	▼	15	Football Manager	Addictive	●	●	●	●				●
18	▲	16	Pitstop 2	Epyx/Us Gold		●						
16	▼	17	Ghostbusters	Activision	●	●	●				●	●
17	▼	18	Manic Miner	Software Projects	●	●	●				●	●
20	▲	19	Theatre Europe	PSS		●						
RE	●	20	[illegible]	Commodore		●						

Top Ten

1	Soft Aid	Various
2	Spy Hunter	US Gold
3	Shadowfire	Beyond
4	[illegible]	Imagine
5	Starion	Melbourne Hse
6	Bruce Lee	US Gold
7	Everyone's a Wally	Mikro Gen
8	Finders Keepers	Mastertronic
9	Rocky Horror Show	CRL
10	Formula One Simulator	Mastertronic

Top Ten

1	Revs	Acornsoft
2	Knight Lore	Ultimate
3	Alien 8	Ultimate
4	Combat Lynx	Durell
5	Elite	Acornsoft
6	Castle Quest	Micropower
7	Atic Atac	Ultimate
8	Mini Office	Database Publications
9	Manic Miner	Software Projects
10	Wizadore	Imagine

Top Ten

1	Soft Aid	Various
2	Dambusters	US Gold
3	Pitstop	Epyx US Gold
4	Shadowfire	Beyond
5	Theatre Europe	PSS
6	International Basketball	Commodore
7	Impossible Mission	Epyx US Gold
8	Cauldron	Palace Software
9	Kik Start	Mastertronic
10	World Series Baseball	Imagine

Compiled by Gallup for the industry's weekly trade magazine, Computer and Software Retailing.
For details contact John Sarnecki, Computer and Software Retailing, No. 1 Golden Square, London W1R 3AB. 01-437-0626

COMPETITION

INCENTIVE

JUST GAMES

BRIGHT SPARKS

Its a real puzzle of a competition this week courtesy of Incentive Software. There are over thirty prizes for lucky readers!

This week's prize will have you running round in circles chasing your tail.

Incentive Software, whose latest game Confuzion, is now available on Amstrad,Spectrum C64, and BBC/Electron has combed the streets of London looking for a prize suitable for the discerning HCW readership

Incentive's scouts eventually found a couple of wooden puzzles at Just Games that are likely to keep you entertained for weeks if not months, just like Confuzion they claim

The game features an automated production plant for the manufacture and storage of the deadly Confuzion bombs and your task is to destroy the whole complex by eliminating the explosive stockpile. Following this idea, our competition this week involves a complex maze that has you trying to blow up a bomb

The first prize, for the first out of the hat of correct answers, is an intricate wooden jigsaw puzzle based upon the theme of two intertwined snakes All you have to do is take it apart and put it back together again! The puzzle is craftsman made in two types of hardwood and is worth £46

There are 30 runners-up prizes that also take a snakey theme. This time the game is very similar to the problem in Confuzion You have to assemble the wooden cubes in such a manner that the snakes wind right around the cube and end up eating themselves. Each puzzle is worth £5 and there are 30 for HCW readers.

The puzzle

Confuzion involves the manipulation of a number of blocks that have a fuse built into them By sliding the blocks around you have to connect the spark to the bomb with the expected consequence

In our puzzle, from our regular Readers Page puzzler Trevor Truran, you have to find the shortest path from spark to bomb. Trevor explains

In this unusual fusebox the number by each length of fuse is the time in seconds that length takes to burn.

There are many possible paths from spark to bomb and the path the burning fuse takes is selected by microswitches at the back

As you can see
the spark is alive
the fuse is just about to be lit
it is going to take the *shortest possible route* to the bomb'

How many seconds will it take before the bomb goes off?

How to enter

When you have found your shortest path, mark it on the picture, add your name and address, cut it out and pop it into an envelope addressed to Confuzion Competition, Home Computing Weekly, No.1 Golden Square, London W1R 3AB

Your entry should arrive by first post on Friday 26 July, 1985

Don't forget to write, clearly, the time your path takes to burn on the back of the envelope

The rules

- Entries will not be accepted from employees of Argus Specialist Publications, Incentive Software and Ambassador Plastics & Sons, their agents or distributors
- The How to enter section forms part of the rules
- The editor's decision is final and no correspondence can be entered into

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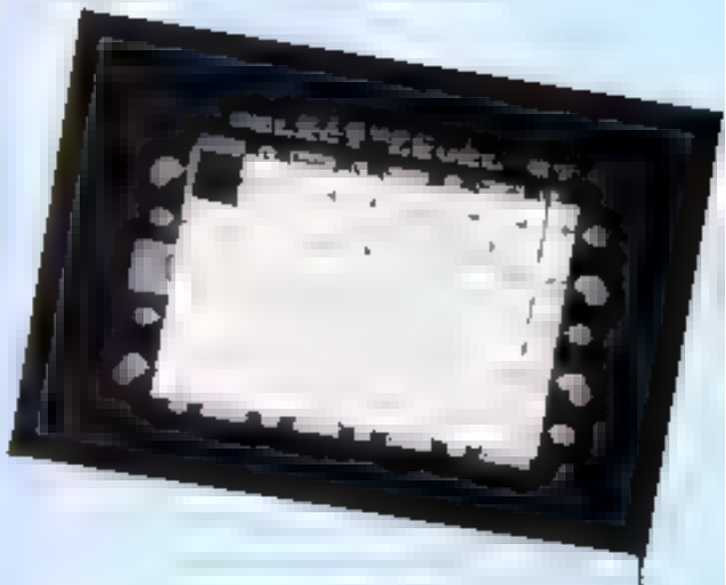

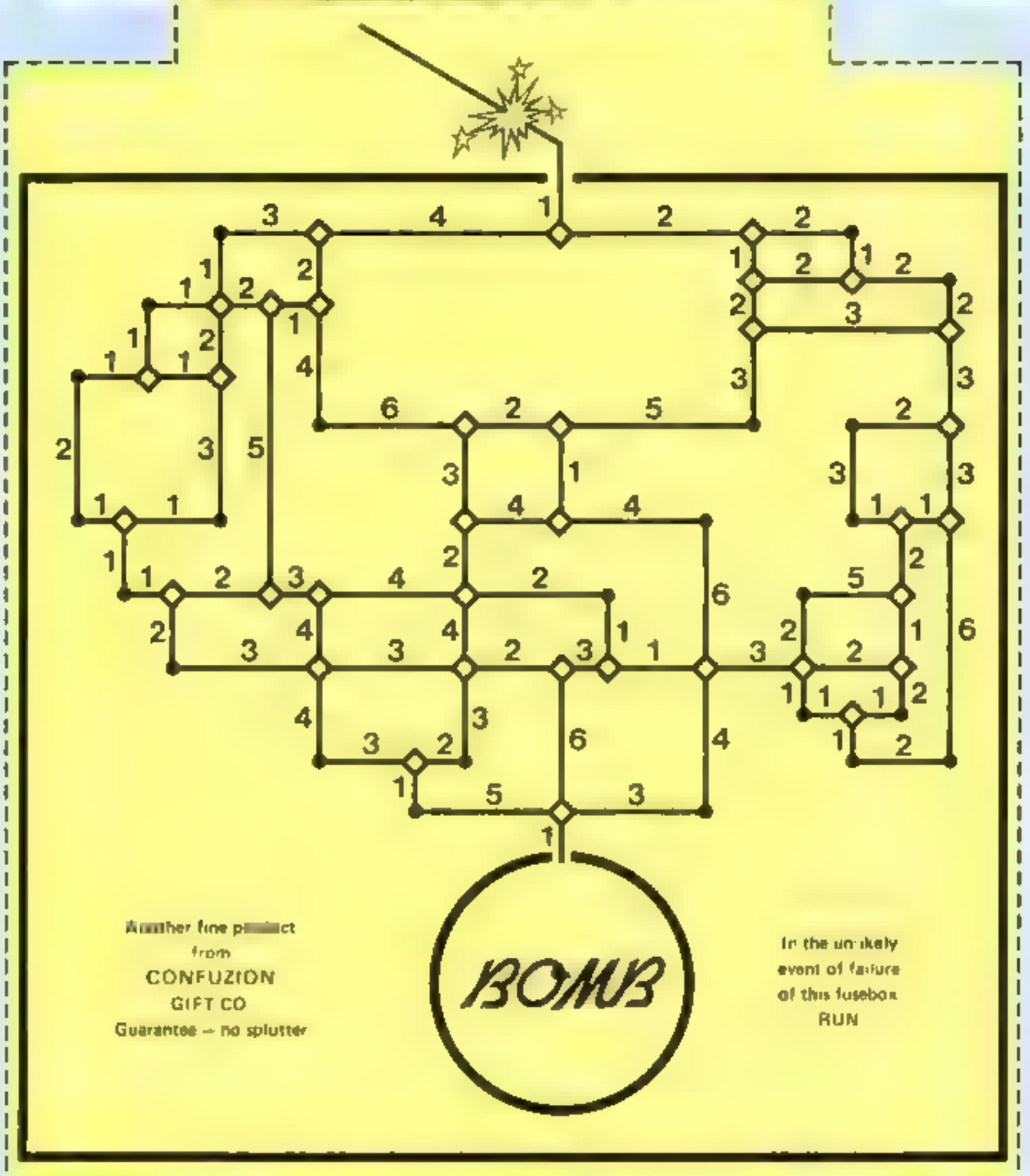

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FREE GAME WORTH £5.95 WITH EACH SPECTRUM REPAIR.

CLASSIFIED RING 01-437 0699

Programs are always supplied on cassette and are accompanied by full details of the program variables, how the program works and any hints on conversion you can offer. Please type these details double spaced. Listings are helpful but not essential. What is vital is that the programs should be completely error free, so please double check.

Always use a coupon firmly fixed to the back of your envelope, and fully complete and enclose the cassette inlay card.

We are particularly interested in programs with less than 100 actual lines of BASIC. All submissions are acknowledged.

Send your programs to HCW!

Use this cassette inlay card for your program

Name _____

Address _____

_____

_____

_____

_____

Expansion needed _____

_____

Special loading instructions _____

_____

Program title _____

Machine _____

HOME COMPUTING WEEKLY

Program submission _____

Complete this coupon and stick it firmly on the back of your envelope

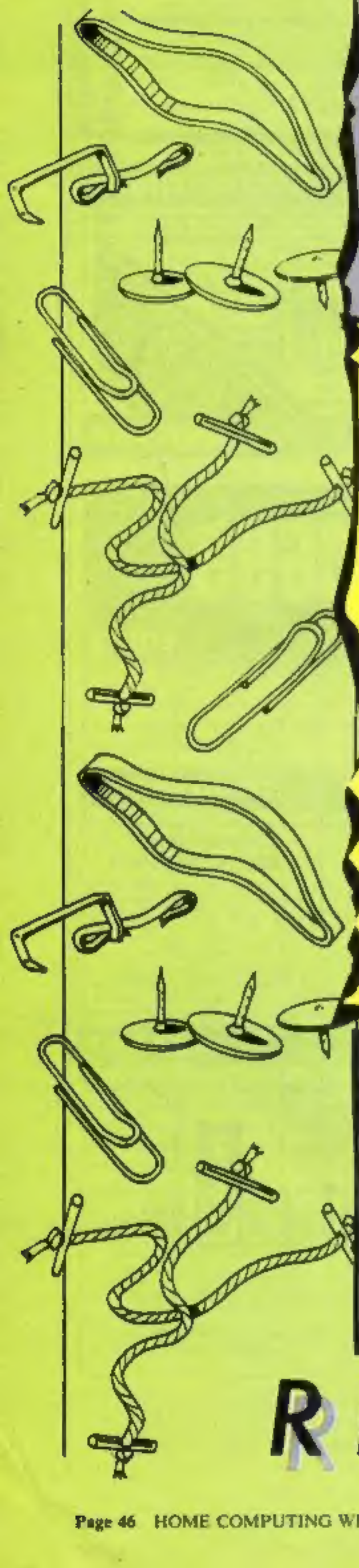
Name _____

Address _____

_____

Program title _____ **Machine** _____

READERS



Keep a low profile

Here is a useful tip for C64 users.

If you have trouble keeping the machine in lower case while typing lower case programs out of magazines then put the machine in lower case and hold down CTRL while pressing H at the same time. This locks lower case.

To get back to upper case, hold down CTRL while pressing I. Now you can select upper or lower case as normal.

I would also like some help in opening the door in Castle of Terror.

Adrian Craig, Billingham

Here are two short routines from V Spanner for the BBC computer.

This one will produce a laser gun effect on your screen.

```
10 MODE 2:MOVE 0,0:
GCOLO, RND(7):DRAW
RND(800),RND(900):
SOUNDO,-15,6,1:SOUND
0,-15,1,1: RUN
```

This program will protect a BASIC program but "control break" will cancel it.

```
5 *KEY 10 11*FX229,1 11M
RUN11M
```

Hex words

These cryptic clues lead to six 6-letter words which go into our grid clockwise around each hexagon, starting from the cell with the clue number in it.

The clues are unusual in that each word you are seeking is an anagram of six consecutive letters in the clue.

For example, if we offered react rather volcanically the answer would be CRATER, an anagram of the first six letters.

1 What chronic sea breeze does to a sailor's rope.

2 Knob united in hurting the feet.

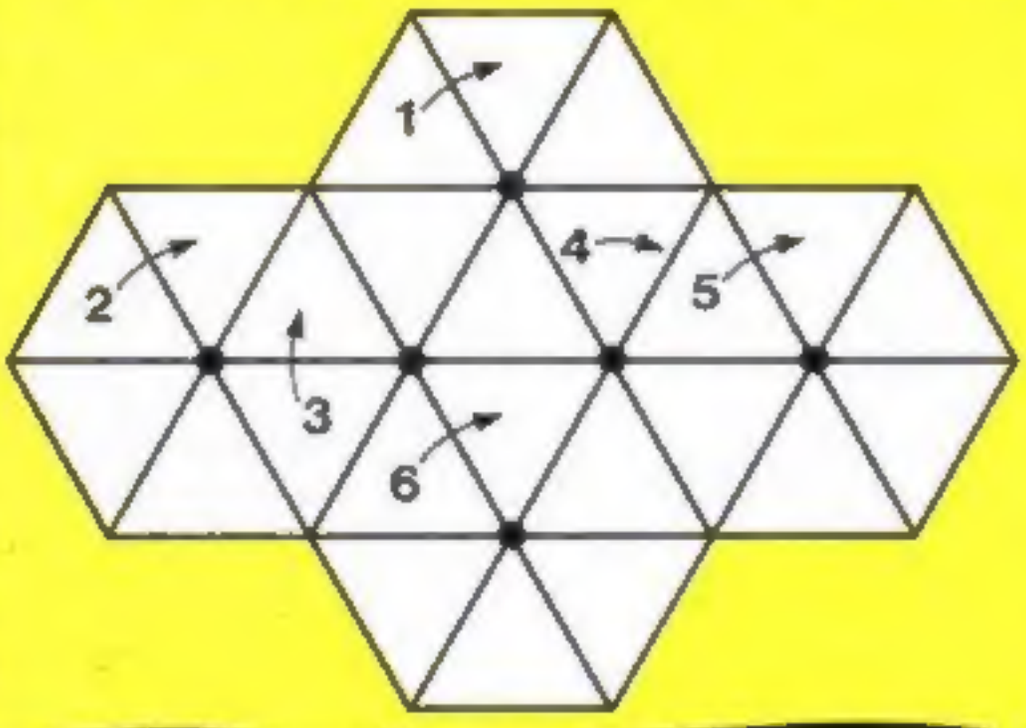
3 Put in restaurant coin slot.

4 Secure area for poison.

5 Noises which pour around parliament.

6 Follows animal to its lair.

Can you find all six words?



Solution to last weeks puzzle

Competition Week Two

Here is the second clue in the four part competition sponsored and written by Micronet 800, available via Home Computing Weekly and "DATABASE", the Thames Television program.

Clue 2

Part A

"It's cathedral spire reaches up to the sky,
The tallest in England, four hundred foot high,
Inside lies a rare copy of an important charter,
Signed at Runneymeade, the Magna Carta."

Part B

Stirring rotten tokens produces five towns but only one answer.

The 30 winners will each receive one years free subscription to Prestel/ Micronet.

Prizes will be announced on the "DATABASE" Television Series in September.

Micronet and Communication

Micronet 800 gives a wealth of communication facilities at your fingertips. The service networks to over 50,000 people across the nation and this includes free electronic mail, international telex, Micronet chatlines, the gallery, teleshopping, celebrity chatline, contact and swapshop.

The chatlines are very similar to CB but using your micro. You can hold live conversations direct from your keyboard and in celebrity chatline you can interview industry personalities every Wednesday night.

Galley is the new interactive service that offers awards for your Viewdata designs and with Teleshopping you can order goods at all hours, saving both money and effort.

Don"t forget to order next weeks copy of HCW and be among the first to have clue number three.

READERS PAGE

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Fun and games Summer 85

FIVE-A-SIDE

Cheering-whistling-shouting crowd with their banners aloft set the scene for a lively game of FIVE A SIDE played at a fast and furious pace where the skills of passing and shooting are as essential as speed.

Match your skills against the computer at three skill levels or play against another opponent.

Before the kick off, the crowd give their enthusiastic support by singing "Here We Go".

Penalty shoot outs are one of many star features of this game.

CBM 64 £5.95 (cass) £8.95 (disk)

Available for Amstrad and MSX in early autumn.

OUT ON A LIMB

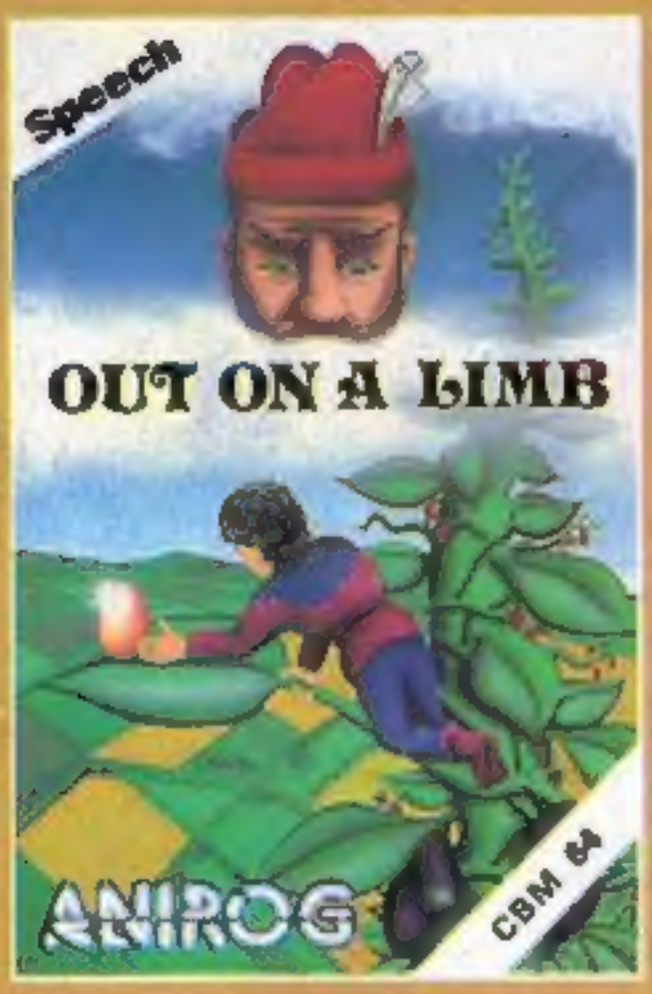
FEE - FIE - FO - FUM

I smell the blood of an Englishman

HA - HA - HA - HA - HA!

Will Jack be warned by the mocking sinister speech of the giant or will he continue his quest to retrieve the family fortune with nothing but his agility of mind and body to help him.

CBM 64 £5.95 (cass) £8.95 (disk)



The stunning speech effects in the above programs were generated by ANIROG/COVOX VOICE MASTER

Contact Anirog for further information.

ANIROG

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